

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 06.10.97
Test oil : ISO 4113

Combination No. : 0 402 066 712

Injection pump
Pump designation : PES6P120A120RS3358
EP type number : 0 412 026 784

Governor
Governor design. : RSV475...1200P2A675
Governor no. : 0 421 833 594

Cust. part No. : 3283573

Customer-spec. information

Customer : CDC
Motor : 68TA-590 ELITE
Power KW : 138.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 1.5

Overflow quantity
min. l/h : 100
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 7.75
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1200

Rack travel in mm : 11.30
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 140.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 475

Rack travel in mm : 5.30
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 21.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.5

Spread

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + - 0.20

governor spring
pre-tension
click setting x : 3.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1200
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 140.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 104.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 10.30
Rated speed rpm : 1265
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1345
Tolerance 1/min : + - 15

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1475

rack travel mm : 4.00
Rated speed rpm : 1355
Tolerance 1/min : + - 15

LOW IDLE

control lever
position degree : 82.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 485
rack travel mm : 4.80
Tolerance mm : + - 0.10

Testing:

Rated speed rpm : 485
 rack travel mm : 5.30
 Tolerance mm : \pm 0.10

rack travel mm : 2.00
 Rated speed rpm : 605
 Tolerance 1/min : \pm 30

TORQUE CONTROL

Rated speed rpm : 1200
 rack travel mm : 11.30
 Tolerance mm : \pm 0.05

Rated speed rpm : 750
 rack travel mm : 11.30
 Tolerance mm : \pm 0.10

ANEROID/ALTITUDE COMPENSATOR TEST**SETTING**

Rated speed rpm : 500
 Pressure hPa : 1500
 rack travel mm : 11.30
 Tolerance mm : \pm 0.05

Rated speed rpm : 500
 Pressure hPa : -
 rack travel mm : 9.00
 Tolerance mm : \pm 0.20

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 900
 rack travel mm : 10.90
 Tolerance mm : \pm 0.20

Pressure hPa : 560
 rack travel mm : 9.55
 Tolerance mm : \pm 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
 hPa : 1500
 Rated speed rpm : 750
 Del. quantity
 cm³/1000 strokes : 157.0

Tolerance
 cm³/1000 strokes : \pm 3.0
 Check tolerance
 cm³/1000S. : \pm 6.0
 Spread
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

Aneroid pressure

hPa : -
 Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 97.0
 Tolerance
 cm³/1000 strokes : \pm 2.0
 Check tolerance
 cm³/1000S. : \pm 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : 20.25
 Tolerance mm : \pm 0.75
 Del. quantity
 cm³/1000 strokes : 170.0
 Tolerance
 cm³/1000 strokes : \pm 20.0
 Check tolerance
 cm³/1000S. : \pm 25.0

LOW IDLE

Rated speed rpm : 475
 Rack travel in mm : 5.30
 Tolerance mm : \pm 0.10
 Del. quantity
 cm³/1000 strokes : 21.0
 Tolerance
 cm³/1000 strokes : \pm 2.0
 Check tolerance
 cm³/1000S. : \pm 4.5
 Spread
 Tolerance
 cm³/1000 strokes : 6.0
 Check tolerance
 cm³/1000S. : 9.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 07.10.97
Test oil : ISO 4113

Combination No. : 0 402 640 817

Injection pump
Pump designation : PE12P120A520LS7826
EP type number : 0 412 620 817

Governor
Governor design. : RQV350...1150PA870
: -4
Governor no. : 0 421 813 717

Cust. part No. : 0180745402

Customer-spec. information

Customer : MB-NFZ
Motor : OM 444 LA
Power KW : 736.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5

Overflow quantity
min. l/h : 160
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.00
Tolerance mm : + 1.00

Firing order : 12- 1- 5- 9- 8
: - 3- 4- 11- 10
: - 2- 6- 7

Phasing : 0-45-60-105-120
: -165-180-225-240
: -285-300-345
Tolerance : + 0.50

Check
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 12

BASIC SETTING

Rated speed rpm : 1150

Rack travel in mm : 15.30
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 306.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

Rated speed rpm : 350

Rack travel in mm : 5.60
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 15.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1206
guide sleeve

travel mm : 8.15
Tolerance mm : + - 0.15

Rated speed rpm : 350
guide sleeve

travel mm : 1.55
Tolerance mm : + - 0.20

Rated speed rpm : 600
guide sleeve

travel mm : 3.55
Tolerance mm : + - 0.25

Rated speed rpm : 960
guide sleeve

travel mm : 5.55

Tolerance mm : + - 0.25

Rated speed rpm : 1291

guide sleeve

travel mm : 10.05

Tolerance mm : + - 0.25

GUIDE SLEEVE POSITION

control lever
position degree : - 1

Rated speed rpm : 1275

Rack travel in mm : 16.50

Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1150

Aneroid pressure
hPa : 1300

Del. quantity
cm³/1000 strokes : 306.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

CONTROL LEVER

control lever
position degree : 117.0

tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 14.30

Rated speed rpm : 1195

Tolerance 1/min : + - 5

rack travel mm : 4.00

Rated speed rpm : 1285

Tolerance 1/min : + - 15

rack travel mm : 0.50

Tolerance mm : + - 0.50

Rated speed rpm : 1350

LOW IDLE

control lever
position degree : 66.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 7.30

Testing:

Rated speed rpm : 350
rack travel mm : 5.60
Tolerance mm : + 0.10

Rated speed rpm : 475

TORQUE CONTROL

Rated speed rpm : 1150
rack travel mm : 15.30
Tolerance mm : + 0.05

Rated speed rpm : 750
rack travel mm : 15.30
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1300
rack travel mm : 15.40
Tolerance mm : + 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 8.45
Tolerance mm : + 0.15

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 300
rack travel mm : 10.20
Tolerance mm : + 0.05

Pressure hPa : 700
rack travel mm : 13.80

Tolerance mm : + 0.15

Start interlock

Rated speed rpm : > 200
Rated speed rpm : < 310

Check
speed 1/min : > 180
Check
speed 1/min : < 330

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1300
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 313.0
Tolerance
cm³/1000 strokes : + 5.0
Check tolerance
cm³/1000S. : + 8.0
Spread
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 15.0

Aneroid pressure
hPa : 1300
Rated speed rpm : 1150
Del. quantity
cm³/1000 strokes : 234.5
Tolerance
cm³/1000 strokes : + 1.5
Check tolerance
cm³/1000S. : + 4.5
Spread
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 15.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 124.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread

Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 15.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 331.0
Tolerance
cm³/1000 strokes : + 10.0
Check tolerance
cm³/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.60
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 15.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

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adjustment instructions.
See microcard(s) W400/...

Edition : 06.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 679

Injection pump
Pump designation : PE6P120A320RS7447Z
EP type number : 0 412 626 969

Governor
Governor design. : RQ275/1150PA1361
Governor no. : 0 421 801 825

Cust. part No. : 1329610

Customer-spec. information
Customer : DAF
Motor : GS 160
Power KW : 160.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 145
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.60
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.70

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 10.60
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 154.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : 5.05
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 24.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1202

guide sleeve
travel mm : 6.51

Tolerance mm : + - 0.15

Rated speed rpm : 275

guide sleeve
travel mm : 2.08

Tolerance mm : + - 0.20

Rated speed rpm : 1150

guide sleeve
travel mm : 6.00

Tolerance mm : + - 0.10

Rated speed rpm : 355

guide sleeve
travel mm : 4.57
Tolerance mm : + - 0.10

Rated speed rpm : 440
guide sleeve
travel mm : 6.00
Tolerance mm : + - 0.10

Rated speed rpm : 1360
guide sleeve
travel mm : 11.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 600

Rack travel in mm : 16.00
Tolerance mm : + - 0.40

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 154.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 97.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 9.60

Rated speed rpm : 1202
Tolerance 1/min : + - 8

rack travel mm : 4.00
Rated speed rpm : 1275
Tolerance 1/min : + - 15

rack travel mm : 0.70
Tolerance mm : + - 0.70
Rated speed rpm : 1450

LOW IDLE

control lever
position degree : 74.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm min. : > 6.50

Testing:

Rated speed rpm : 275
rack travel mm : 5.05
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 350
Tolerance 1/min : + - 20

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 10.60
Tolerance mm : + - 0.05

Rated speed rpm : 1150
rack travel mm : 10.60
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 600
Pressure hPa : 1000
rack travel mm : 10.60
Tolerance mm : + - 0.05

Rated speed rpm : 600
Pressure hPa : -
rack travel mm : 6.75
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 600

Pressure hPa : 175
rack travel mm : 9.70
Tolerance mm : + - 0.05

Pressure hPa : 80
rack travel mm : 7.50
Tolerance mm : + - 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 101.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

LOW IDLE

Rated speed rpm : 275
Rack travel in mm : 5.05
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 07.10.97
Test oil : ISO 4113

Combination No. : 0 402 648 812M

Injection pump
Pump designation : PE8P120A320LS7801
: -10
EP type number : 0 412 628 851

Governor
Governer design. : RQ300/1050PA717
Governer no. : 0 421 801 258

Cust. part No. :

Customer-spec. information
Motor : OM442 LA
Power KW : 320.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5

Overflow quantity
min. l/h : 110
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 2.5
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 8- 7- 2- 6- 3
: - 5- 4- 1

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 8

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 15.10
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 223.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 10.0

Rated speed rpm : 300

Rack travel in mm : 6.40
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1000
guide sleeve

travel mm : 6.25
Tolerance mm : + - 0.05

Rated speed rpm : 300
guide sleeve

travel mm : 2.90
Tolerance mm : + - 0.10

Rated speed rpm : 900
guide sleeve

travel mm : 6.15
Tolerance mm : + - 0.05

Rated speed rpm : 600

guide sleeve
travel mm : 6.05
Tolerance mm : + - 0.05

Rated speed rpm : 1150
guide sleeve
travel mm : 9.45
Tolerance mm : + - 0.15

GUIDE SLEEVE POSITION

control lever
position degree : 109
Rated speed rpm : 600

Rack travel in mm : 20.00
Tolerance mm : + - 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
Aneroid pressure

hPa : -
Del. quantity

cm³/1000 strokes : 223.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 10.0

CONTROL LEVER

control lever
position degree : 101.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 14.20
Rated speed rpm : 1092
Tolerance 1/min : + - 8

rack travel mm : 4.00
Rated speed rpm : 1150
Tolerance 1/min : + - 15

rack travel mm : 0.75
Tolerance mm : + - 0.75
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 76.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 7.50

Testing:

Rated speed rpm : 300
rack travel mm : 6.40
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 399
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 15.10
Tolerance mm : + 0.10

Rated speed rpm : 850
rack travel mm : 15.40
Tolerance mm : + 0.15

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1000

MEASUREMENT

Pressure hPa : 400
rack travel mm : 1.20
Tolerance mm : + 0.10

Pressure hPa : 600
rack travel mm : 2.90
Tolerance mm : + 0.10

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check
speed 1/min : > 80
Check
speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 850
Del. quantity
cm3/1000 strokes : 232.0
Tolerance
cm3/1000 strokes : + 2.0
Check tolerance
cm3/1000S. : + 5.0
Spread
Tolerance
cm3/1000 strokes : 7.0
Check tolerance
cm3/1000S. : 10.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 152.0
Tolerance
cm3/1000 strokes : + 1.0
Check tolerance
cm3/1000S. : + 4.0
Spread
Tolerance
cm3/1000 strokes : 7.0
Check tolerance
cm3/1000S. : 10.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 210.0
Tolerance
cm3/1000 strokes : + 10.0
Check tolerance
cm3/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 300

Rack travel in mm : 6.40
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000s. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 31.05.95
Test oil : ISO 4113

Combination No. : 0 402 676 840

Injection pump
Pump designation : PE6P120A320LS7854
EP type number : 0 412 626 971

Governor
Governor design. : RSV550...1050POA826
: -9
Governor no. : 0 421 833 608

Cust. part No. : 0250746302

Customer-spec. information

Customer : MB-NFZ
Motor : OM 441 LA
Power KW : 239.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 115
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 075
Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 6- 3- 5- 2- 4-
: 1

Phasing : 0-60-120-180-240
: -300

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.60
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 224.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : +— 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 550

Rack travel in mm : 3.90

Tolerance mm : +— 0.10

Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : +— 3.0

Check tolerance
cm³/1000S. : +— 6.0

Spread
Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : +— 0.20

governor spring
pre-tension
click setting x : 1.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050

Aneroid pressure

hPa : -

Del. quantity
cm³/1000 strokes : 224.0

Tolerance
cm³/1000 strokes : +— 1.0

Check tolerance
cm³/1000S. : +— 4.0

Spred
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 88.0
tolerance degree : +— 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 1090
rack travel mm : 12.60

Rated speed rpm : 1124
Tolerance 1/min : +— 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : +— 0.55
Rated speed rpm : 1300

Rated speed rpm : 1091
rack travel mm : 12.60

Rated speed rpm : 1125
Tolerance 1/min : +— 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : +— 0.55
Rated speed rpm : 1300

Rated speed rpm : 1092
rack travel mm : 12.60

Rated speed rpm : 1126
Tolerance 1/min : +— 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : +— 0.55
Rated speed rpm : 1300

Rated speed rpm : 1093
rack travel mm : 12.60

Rated speed rpm : 1127
Tolerance 1/min : +— 4

rack travel mm : 4.00
rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1300

Rated speed rpm : 1094
rack travel mm : 12.60

Rated speed rpm : 1128
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1300

rack travel mm : 12.60

rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + - 0.55

LOW IDLE

control lever
position degree : 67.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 450

CRT mm min. : > 8.50

Testing:

Rated speed rpm : 550
rack travel mm : 3.90
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 565
Tolerance 1/min : + - 20

SET IDLE AUXILIARY SPRING

rack travel mm : 2.00

TORQUE CONTROL
Rated speed rpm : 1050
rack travel mm : 13.60
Tolerance mm : + - 0.05

Rated speed rpm : 970
rack travel mm : 13.90
Tolerance mm : + - 0.10
Rated speed rpm : 750
rack travel mm : 14.20
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 247.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 250.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 550
Rack travel in mm : 3.90
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000s. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 08.10.97
Test oil : ISO 4113

Combination No. : 0 402 736 884

Injection pump
Pump designation : PES6P120A720/3LS7251
: -1
EP type number : 0 412 726 926

Governor
Governor design. : RQV300...1000PA962
: -12K
Governor no. : 0 421 815 407

Cust. part No. : 3-7399

Customer-spec. information

Customer : MAN
Motor : D2866LF09
Power KW : 309.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.85
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 15.50
Tolerance mm : + 0.50
Firing order : 6- 2- 4- 1- 5-
: 3

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check tolerance °NW : + 0.75
Barrel no. : 6

BASIC SETTINGRated speed rpm : 900

Rack travel in mm : 13.95
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 294.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Speed

Tolerance
cm³/1000 strokes : 10.0

Check tolerance
cm³/1000S. : 14.0

Rated speed rpm : 300

Rack travel in mm : 5.20
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 32.0
Tolerancecm³/1000 strokes : + - 3.0
Check tolerancecm³/1000S. : + - 6.0
SpeedTolerance
cm³/1000 strokes : 8.0
Check tolerancecm³/1000S. : 12.0

**(B) SETTING OF INJECTION PUMP
WITH GOVERNOR**

GUIDE SLEEVE TRAVELRated speed rpm : 1061
guide sleeve
travel mm : 10.46
Tolerance mm : + - 0.25Rated speed rpm : 300
guide sleeve
travel mm : 1.88

Tolerance mm : + - 0.25

Rated speed rpm : 764

guide sleeve
travel mm : 6.96
Tolerance mm : + - 0.25

Rated speed rpm : 305

guide sleeve
travel mm : 1.88
Tolerance mm : + - 0.25

Rated speed rpm : 355

guide sleeve
travel mm : 2.53
Tolerance mm : + - 0.25

Rated speed rpm : 470

guide sleeve
travel mm : 3.67
Tolerance mm : + - 0.25

Rated speed rpm : 1260

guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITIONcontrol lever
position degree : - 1
Rated speed rpm : 1120Rack travel in mm : 12.50
Tolerance mm : + - 2.00

FULL LOAD DELIVERY AT FULL LOAD STOPRated speed rpm : 900
Aneroid pressure

hPa : 1300

Del. quantity
cm³/1000 strokes : 294.0Tolerance
cm³/1000 strokes : + - 1.0Check tolerance
cm³/1000S. : + - 4.0

Speed

Tolerance
cm³/1000 strokes : 10.0Check tolerance
cm³/1000S. : 14.0

CONTROL LEVER

control lever
position degree : 300.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 12.40
Rated speed rpm : 1045
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1140
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 252.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 6.70

Testing:

Rated speed rpm : 300
rack travel mm : 5.20
Tolerance mm : + - 0.10

Rated speed rpm : 330

TORQUE CONTROL

Rated speed rpm : 900
rack travel mm : 13.95
Tolerance mm : + - 0.05

Rated speed rpm : 1000
rack travel mm : 13.50
Tolerance mm : + - 0.10

Rated speed rpm : 750
rack travel mm : 13.40
Tolerance mm : + - 0.10

Rated speed rpm : 750
rack travel mm : 6.50
Tolerance mm : + - 0.10

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 900
Pressure hPa : 1300
rack travel mm : 13.95
Tolerance mm : + - 0.05

Rated speed rpm : 900
Pressure hPa : -
rack travel mm : 9.10
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 900
Pressure hPa : 720
rack travel mm : 11.90
Tolerance mm : + - 0.20

Pressure hPa : 220
rack travel mm : 9.45
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 240

Check
speed 1/min : > 80
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1300
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 269.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1300
Rated speed rpm : 750

Del. quantity
cm³/1000 strokes : 287.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 107.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0
Spred
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 14.0

End of test specification sheet

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 169.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Del. quantity
cm³/1000 strokes : 210.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 5.20
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 32.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 19.05.88
Test oil : ISO 4113

Combination No. : 0 403 446 169

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123

Governor
Governor design. : RQV300...1300MW68
Governor no. : 0 420 083 101

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ
Motor : OM 366 LA
Power KW : 150.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 1.5
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.75
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 98.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 300
 Rack travel in mm : 5.95
 Tolerance mm : + 0.05
 Del. quantity
 cm³/1000 strokes : 11.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300
 guide sleeve
 travel mm : 1.05
 Tolerance mm : + 0.25
 Rated speed rpm : 1350
 guide sleeve
 travel mm : 8.50
 Tolerance mm : + 0.10
 Rated speed rpm : 1450
 guide sleeve
 travel mm : 9.50
 Tolerance mm : + 0.20
 Rated speed rpm : 600
 guide sleeve
 travel mm : 4.20
 Tolerance mm : + 0.30

GUIDE SLEEVE POSITION

control lever
 position degree : - 1
 Rated speed rpm : 1350
 Rack travel in mm : 16.50
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1300

Aneroid pressure
 hPa : 700
 Del. quantity
 cm³/1000 strokes : 98.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 120.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 10.90
 Rated speed rpm : 1345
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1455
 Tolerance 1/min : + 15
 rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1550

LOW IDLE

control lever
 position degree : 81.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 100
 CRT mm min. : > 7.60
 Testing:
 Rated speed rpm : 300
 rack travel mm : 5.95
 Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST**SETTING**

Rated speed rpm : 500
Pressure hPa : 700
rack travel mm : 11.95
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.15
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 225
rack travel mm : 11.65
Tolerance mm : + - 0.15

Pressure hPa : 170
rack travel mm : 10.45
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check speed 1/min : > 80
Check speed 1/min : < 250

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 700
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 84.5
Tolerance
cm³/1000 strokes : + - 1.5
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 53.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Del. quantity
cm³/1000 strokes : 88.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 300

Rack travel in mm : 5.95
Tolerance mm : + - 0.05
Del. quantity
cm³/1000 strokes : 11.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.08.92
Test oil : ISO 4113

Combination No. : 0 403 474 010

Injection pump
Pump designation : PES4MW100/720RS1127
EP type number : 0 413 404 103

Governor
Governor design. : RSV350...750MWOA336
: -5
Governor no. : 0 420 085 164

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ
Motor : OM364A
Power KW : 84.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1!!!!

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 2.5
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.75
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 96.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

| | | | | | |
|--|---|------------|---------------------------|---|------------|
| Rated speed rpm | : | 350 | tolerance degree | : | \pm 4.0 |
| Rack travel in mm | : | 7.60 | RATED SPEED | | |
| Tolerance mm | : | \pm 0.30 | rack travel mm | : | 0.85 |
| Del. quantity cm ³ /1000 strokes | : | 11.0 | Tolerance mm | : | \pm 0.55 |
| Tolerance cm ³ /1000 strokes | : | \pm 2.0 | Rated speed rpm | : | 850 |
| Check tolerance cm ³ /1000S. | : | \pm 4.5 | ASSEMBLY GOVERNOR SETTING | | |
| Spred | | | Rated speed rpm | : | 750 |
| Tolerance | | | rack travel mm | : | 12.80 |
| cm ³ /1000 strokes | : | 3.5 | Rated speed rpm | : | 784 |
| Check tolerance cm ³ /1000S. | : | 5.5 | Tolerance 1/min | : | \pm 4 |
| | | | rack travel mm | : | 4.00 |

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE POSITION

| | | | | | |
|-------------------|---|------------|-----------------|---|---------|
| control lever | | | Rated speed rpm | : | 751 |
| position degree | : | - 3 | rack travel mm | : | 12.80 |
| Rated speed rpm | : | 800 | Rated speed rpm | : | 785 |
| Rack travel in mm | : | 0.50 | Tolerance 1/min | : | \pm 4 |
| Tolerance mm | : | \pm 0.20 | rack travel mm | : | 4.00 |
| governor spring | | | Rated speed rpm | : | 752 |
| pre-tension | | | rack travel mm | : | 12.80 |
| click setting x | : | 2.00 | Rated speed rpm | : | 786 |

FULL LOAD DELIVERY AT FULL LOAD STOP

| | | | | | |
|--|---|-----------|-----------------|---|---------|
| Rated speed rpm | : | 700 | Rated speed rpm | : | 787 |
| Aneroid pressure | | | Tolerance 1/min | : | \pm 4 |
| hPa | : | - | rack travel mm | : | 4.00 |
| Del. quantity cm ³ /1000 strokes | : | 96.0 | Rated speed rpm | : | 754 |
| Tolerance cm ³ /1000 strokes | : | \pm 1.0 | rack travel mm | : | 12.80 |
| Check tolerance cm ³ /1000S. | : | \pm 3.0 | Rated speed rpm | : | 788 |
| Spred | | | Tolerance 1/min | : | \pm 4 |
| Tolerance | | | rack travel mm | : | 4.00 |
| cm ³ /1000 strokes | : | 3.5 | Rated speed rpm | : | 755 |
| Check tolerance cm ³ /1000S. | : | 6.0 | rack travel mm | : | 12.80 |

CONTROL LEVER

| | | | | | |
|-----------------|---|------|-----------------|---|---------|
| control lever | | | Rated speed rpm | : | 789 |
| position degree | : | 80.0 | Tolerance 1/min | : | \pm 4 |
| | | | rack travel mm | : | 4.00 |

LOW IDLE

control lever
position degree : 72.0
tolerance degree : + - 4.0

End of test specification sheet

Setting point w/out bumper spring

Rated speed rpm : 100
CRT mm min. : > 19.00

Testing:

Rated speed rpm : 350
rack travel mm : 7.60
Tolerance mm : + - 0.30

rack travel mm : 2.00
Rated speed rpm : 460
Tolerance 1/min : + - 30

STARTING FUEL DELIVERY

Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 7.60
Tolerance mm : + - 0.30
Del. quantity
cm³/1000 strokes : 11.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 08.10.97
Test oil : ISO 4113

Combination No. : 0 403 474 021

Injection pump
Pump designation : PES4MW100/720RS1181
EP type number : 0 413 404 107

Governor
Governor design. : RSV400...1000MW1A348
Governor no. : 0 420 085 183

Cust. part No. : 9880882

Customer-spec. information
Customer : LIEBHERR
Motor : D924T-E A2
Power KW : 120.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 890

Rack travel in mm : 13.20
Tolerance mm : + 0.05

Del. quantity cm³/1000 strokes : 177.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0

Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

Rated speed rpm : 550
 Rack travel in mm : 4.50
 Tolerance mm : + - 0.20
 Del. quantity
 cm³/1000 strokes : 25.0
 Tolerance
 cm³/1000 strokes : + - 2.0
 Check tolerance
 cm³/1000S. : + - 4.5
 Spred
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.65
 Tolerance mm : + - 0.35
 governor spring
 pre-tension
 click setting x : 3.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 890
 Aneroid pressure
 hPa : 1250
 Del. quantity
 cm³/1000 strokes : 177.0
 Tolerance
 cm³/1000 strokes : + - 1.0
 Check tolerance
 cm³/1000S. : + - 4.0
 Spred

Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

CONTROL LEVER

control lever
 position degree : 96.0
 tolerance degree : + - 4.0
 RATED SPEED
 rack travel mm : 12.20
 Rated speed rpm : 920
 Tolerance 1/min : + - 5
 rack travel mm : 4.00
 Rated speed rpm : 980
 Tolerance 1/min : + - 10
 rack travel mm : 1.00
 Tolerance mm : + - 0.70
 Rated speed rpm : 1100
 rack travel mm : 4.00
 Rated speed rpm : 990
 Tolerance 1/min : + - 10

LOW IDLE

control lever
 position degree : 78.0
 tolerance degree : + - 4.0
 Setting point w/out bumper spring

Rated speed rpm : 550
 rack travel mm : 4.10
 Tolerance mm : + - 0.10
 Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 550
 rack travel mm : 4.50
 Tolerance mm : + - 0.20

TORQUE CONTROL

Rated speed rpm : 890
 rack travel mm : 13.20

Tolerance mm : + 0.05
 Rated speed rpm : 500
 rack travel mm : 13.20
 Tolerance mm : + 0.10
 Rated speed rpm : 600
 rack travel mm : 13.20
 Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
 Pressure hPa : 1250
 rack travel mm : 13.20
 Tolerance mm : + 0.05
 Rated speed rpm : 550
 Pressure hPa : -
 rack travel mm : 11.50
 Tolerance mm : + 0.05

MEASUREMENT

Rated speed rpm : 550
 Pressure hPa : 560
 rack travel mm : 11.90
 Tolerance mm : + 0.05
 Pressure hPa : 650
 rack travel mm : 12.80
 Tolerance mm : + 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
 hPa : 1250
 Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 178.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 6.0
 Check tolerance
 cm³/1000S. : 9.0

Aneroid pressure
 hPa : 1250
 Rated speed rpm : 600
 Del. quantity
 cm³/1000 strokes : 180.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 5.0

Aneroid pressure
 hPa : -
 Rated speed rpm : 550
 Del. quantity
 cm³/1000 strokes : 149.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

ESS test: With 24 V solenoid activated,
rack must reach start position in max.
control lever setting.

Rated speed rpm : 100
 rack travel mm : 20.00
 Tolerance mm : + 1.00
 Del. quantity
 cm³/1000 strokes : 135.0
 Tolerance
 cm³/1000 strokes : + 5.0
 Check tolerance
 cm³/1000S. : + 8.0

LOW IDLE

Rated speed rpm : 550
 Rack travel in mm : 4.50
 Tolerance mm : + 0.20
 Del. quantity
 cm³/1000 strokes : 25.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.5
 Spread
 Tolerance
 cm³/1000 strokes : 3.5

Check tolerance
cm³/1000s. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 08.10.97
Test oil : ISO 4113

Combination No. : 0 403 474 021F

Injection pump
Pump designation : PES4MW100/720RS1181
EP type number : 0 413 404 107

Governor
Governor design. : RSV400...1000MW1A348
Governor no. : 0 420 085 183

Cust. part No. :

Customer-spec. information
Customer : LIEBHERR
Motor : D924 T-E A2
Power KW : 120.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 890

Rack travel in mm : 13.20
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 177.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 4.0

Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

Rated speed rpm : 400
 Rack travel in mm : 4.50
 Tolerance mm : + 0.20
 Del. quantity
 cm³/1000 strokes : 25.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.5
 Spred
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.65
 Tolerance mm : + 0.35
 governor spring
 pre-tension
 click setting x : 3.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 890
 Aneroid pressure
 hPa : 1250
 Del. quantity
 cm³/1000 strokes : 177.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred

Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

CONTROL LEVER

control lever
 position degree : 96.0
 RATED SPEED
 rack travel mm : 12.20
 Rated speed rpm : 920
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 980
 Tolerance 1/min : + 10
 rack travel mm : 1.00
 Tolerance mm : + 0.70
 Rated speed rpm : 1075
 rack travel mm : 4.00
 Rated speed rpm : 990
 Tolerance 1/min : + 10

LOW IDLE

control lever
 position degree : 78.0
 Setting point w/out bumper spring
 Rated speed rpm : 550
 rack travel mm : 4.10
 Tolerance mm : + 0.10
 Rated speed rpm : 100
 CRT mm min. : > 19.00

Testing:

Rated speed rpm : 550
 rack travel mm : 4.50
 Tolerance mm : + 0.20

TORQUE CONTROL

Rated speed rpm : 890
 rack travel mm : 13.20
 Tolerance mm : + 0.05

Rated speed rpm : 500
rack travel mm : 13.20
Tolerance mm : + - 0.05

Rated speed rpm : 600
rack travel mm : 13.20
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 1250
rack travel mm : 13.20
Tolerance mm : + - 0.05

Rated speed rpm : 550
Pressure hPa : -
rack travel mm : 11.50
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 550
Pressure hPa : 560
rack travel mm : 11.90
Tolerance mm : + - 0.05

Pressure hPa : 650
rack travel mm : 12.80
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1250
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 178.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 9.0

Aneroid pressure
hPa : 1250

Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 180.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 149.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

ESS test: With 24 V solenoid activated,
rack must reach start position in max.
control lever setting.

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + - 1.00
Del. quantity
cm³/1000 strokes : 135.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 4.50
Tolerance mm : + - 0.20
Del. quantity
cm³/1000 strokes : 25.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 08.10.97
Test oil : ISO 4113

Combination No. : 0 403 476 071

Injection pump
Pump designation : PES6MW100/720RS1130
: -2
EP type number : 0 413 406 164

Governor
Governor design. : RSV350...1300MW0A318
: -6
Governor no. : 0 420 085 117

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ
Motor : OM 366 A
Power KW : 125.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015

Outside diameter : 6.0
x inside diameter : 1.5
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.75
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1280

Rack travel in mm : 11.05
Tolerance mm : + 0.05

Del. quantity
cm3/1000 strokes : 78.0

Tolerance
cm3/1000 strokes : + 1.0

Check tolerance
cm3/1000s. : + 3.0

Spread _____

Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 6.0

Rated speed rpm : 350
 Rack travel in mm : 7.50
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 11.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.65
 Tolerance mm : + 0.35

governor spring
 pre-tension
 click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1280
 Aneroid pressure
 hPa : -
 Del. quantity
 cm³/1000 strokes : 78.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5

Check tolerance
 cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 100.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 10.00
 Rated speed rpm : 1325
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1395
 Tolerance 1/min : + 15
 rack travel mm : 1.00
 Tolerance mm : + 0.70
 Rated speed rpm : 1560

LOW IDLE

control lever
 position degree : 73.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 100
 CRT mm min. : > 19.00
 Testing:
 Rated speed rpm : 350
 rack travel mm : 7.50
 Tolerance mm : + 0.10
 rack travel mm : 2.00
 Rated speed rpm : 430
 Tolerance 1/min : + 30

TORQUE CONTROL
 Rated speed rpm : 1280
 rack travel mm : 11.05
 Tolerance mm : + 0.05
 Rated speed rpm : 750
 rack travel mm : 11.75
 Tolerance mm : + 0.05

Rated speed rpm : 825
rack travel mm : 11.50
Tolerance mm : + - 0.10

Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

Start interlock

Rated speed rpm : > 100
Check
speed 1/min : > 80

End of test specification sheet

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 73.0
Tolerance
cm³/1000 strokes : + - 1.5
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 83.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 7.50
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 11.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.0
Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 02.10.97
Test oil : ISO 4113

Combination No. : 0 403 476 112

Injection pump
Pump designation : PES6MW100/720RS1225
: -1
EP type number : 0 413 406 220

Governor
Governor design. : RSV400...1000MW1A338
: -1
Governor no. : 0 420 085 184

Cust. part No. : 9880791

Customer-spec. information

Customer : LIEBHERR
Motor : D 926 T-E A2
Power KW : 164.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.51
Tolerance mm : + 1.50
Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 990

Rack travel in mm : 14.05
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 159.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

Rated speed rpm : 400
 Rack travel in mm : 5.80
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 17.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.5
 Spred
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.65
 Tolerance mm : + 0.35
 governor spring
 pre-tension
 click setting x : 2.25

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 990
 Aneroid pressure
 hPa : 1200
 Del. quantity
 cm³/1000 strokes : 159.0
 Tolerance
 cm³/1000 strokes : + 1.0

Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

CONTROL LEVER

control lever
 position degree : 98.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 13.05
 Rated speed rpm : 1030
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1075
 Tolerance 1/min : + 10
 rack travel mm : 1.00
 Tolerance mm : + 0.70
 Rated speed rpm : 1200
 rack travel mm : 4.00
 Rated speed rpm : 1085
 Tolerance 1/min : + 10

LOW IDLE

control lever
 position degree : 70.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring

Rated speed rpm : 400
 rack travel mm : 5.00
 Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 400
 rack travel mm : 5.80
 Tolerance mm : + 0.10

TORQUE CONTROL

Rated speed rpm : 990
rack travel mm : 14.05
Tolerance mm : + - 0.05

Rated speed rpm : 500
rack travel mm : 14.05
Tolerance mm : + - 0.10

Rated speed rpm : 700
rack travel mm : 14.05
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 1200
rack travel mm : 14.05
Tolerance mm : + - 0.10

Rated speed rpm : 550
Pressure hPa : --
rack travel mm : 13.40
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 550
Pressure hPa : 565
rack travel mm : 13.60
Tolerance mm : + - 0.10

Pressure hPa : 650
rack travel mm : 13.95
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0
Spread

Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 9.0

Aneroid pressure
hPa : 1200
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 160.5
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0

Aneroid pressure
hPa : --
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 139.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.25
Tolerance mm : + - 0.75
Del. quantity
cm³/1000 strokes : 135.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 5.80
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 17.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 02.10.97
Test oil : ISO 4113

Combination No. : 0 403 476 i120

Injection pump
Pump designation : PES6MW100/720RS1225
: -1
EP type number : 0 413 406 220

Governor
Governor design. : RSV400...1000MW1A338
: -1
Governor no. : 0 420 085 184

Cust. part No. : 9880791

Customer-spec. information

Customer : LIEBHERR
Motor : D 926 T-EA2
Power KW : 164.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.51
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °Nw : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 990

Rack travel in mm : 14.05
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 159.5

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 5.80
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 17.0

Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000S. : + 4.5

Spred

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.65
Tolerance mm : + 0.35

governor spring
pre-tension
click setting x : 2.25

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 990
Aneroid pressure
hPa : 1200
Del. quantity
cm³/1000 strokes : 159.5
Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 98.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 13.05
Rated speed rpm : 1030
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1075
Tolerance 1/min : + 10

rack travel mm : 1.00
Tolerance mm : + 0.70
Rated speed rpm : 1200

rack travel mm : 4.00
Rated speed rpm : 1085
Tolerance 1/min : + 10

LOW IDLE

control lever
position degree : 70.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 400
rack travel mm : 5.00
Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm min. : > 19.50

Testing:

Rated speed rpm : 400
rack travel mm : 5.80
Tolerance mm : + 0.10

TORQUE CONTROL

Rated speed rpm : 990
rack travel mm : 14.05
Tolerance mm : + - 0.05

Rated speed rpm : 500
rack travel mm : 14.05
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 14.05
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1200
rack travel mm : 14.05
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 13.40
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 565
rack travel mm : 13.60
Tolerance mm : + - 0.10

Pressure hPa : 650
rack travel mm : 13.95
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0
Spread

Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : + - 9.0

Aneroid pressure
hPa : 1200
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 160.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 139.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.25
Tolerance mm : + - 0.75
Del. quantity
cm³/1000 strokes : 135.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 5.80
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 17.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000s. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.02.93
Test oil : ISO 4113

Combination No. : 0 403 476 113

Injection pump
Pump designation : PES6MW100/720RS1131
: -1
EP type number : 0 413 406 165

Governor
Governor design. : RSV350...1200MWOA342
: -10
Governor no. : 0 420 085 187

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ
Motor : OM 366 LA
Power KW : 132.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0
x inside diameter : 2.5
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1200

Rack travel in mm : 11.10
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 17.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 3.0

Spread

Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 6.0

Rated speed rpm : 350
 Rack travel in mm : 5.75
 Tolerance mm : + 0.25
 Del. quantity
 cm³/1000 strokes : 11.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.5
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800

Rack travel in mm : 0.65
 Tolerance mm : + 0.35

governor spring
 pre-tension
 click setting x : 3.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1200
 Aneroid pressure
 hPa : 700
 Del. quantity
 cm³/1000 strokes : 77.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5

Check tolerance
 cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 100.0
 tolerance degree : + 4.0

RATED SPEED

rack travel mm : 1.00
 Tolerance mm : + 0.70
 Rated speed rpm : 1450

rack travel mm : 4.00
 Rated speed rpm : 1315
 Tolerance 1/min : + 15

rack travel mm : 10.10
 Rated speed rpm : 1248
 Tolerance 1/min : + 8

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 1240
 rack travel mm : 10.10

Rated speed rpm : 1284
 Tolerance 1/min : + 4
 rack travel mm : 4.00

Rated speed rpm : 1241
 rack travel mm : 10.10

Rated speed rpm : 1285
 Tolerance 1/min : + 4
 rack travel mm : 4.00

Rated speed rpm : 1242
 rack travel mm : 10.10

Rated speed rpm : 1286
 Tolerance 1/min : + 4
 rack travel mm : 4.00

Rated speed rpm : 1243
 rack travel mm : 10.10

Rated speed rpm : 1287
 Tolerance 1/min : + 4
 rack travel mm : 4.00

Rated speed rpm : 1244

rack travel mm : 10.10

Rated speed rpm : 1288

Tolerance 1/min : + - 4

rack travel mm : 4.00

Rated speed rpm : 1245

rack travel mm : 10.10

Rated speed rpm : 1289

Tolerance 1/min : + - 4

rack travel mm : 4.00

LOW IDLE

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 350

rack travel mm : 5.75

Tolerance mm : + - 0.25

rack travel mm : 2.00

Rated speed rpm : 430

Tolerance 1/min : + - 30

TORQUE CONTROL

Rated speed rpm : 1200

rack travel mm : 11.10

Tolerance mm : + - 0.10

Rated speed rpm : 500

rack travel mm : 12.30

Tolerance mm : + - 0.10

Rated speed rpm : 600

rack travel mm : 12.10

Tolerance mm : + - 0.10

Rated speed rpm : 1000

rack travel mm : 11.50

Tolerance mm : + - 0.10

ANEROID/ALTITUDE

COMPENSATOR TEST

SETTING

Rated speed rpm : 500

Pressure hPa : -

rack travel mm : 10.20

Tolerance mm : + - 0.10

Rated speed rpm : 500

Pressure hPa : 200

rack travel mm : 11.10

Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 700

rack travel mm : 12.20

Tolerance mm : + - 0.10

Pressure hPa : 300

rack travel mm : 11.70

Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : 700

Rated speed rpm : 500

Del. quantity

cm³/1000 strokes : 71.5

Tolerance

cm³/1000 strokes : + - 1.5

Check tolerance

cm³/1000S. : + - 4.0

Spread

Tolerance

cm³/1000 strokes : 5.0

Check tolerance

cm³/1000S. : 7.0

Aneroid pressure

hPa : -

Rated speed rpm : 500

Del. quantity

cm³/1000 strokes : 37.0

Tolerance

cm³/1000 strokes : + - 1.0

Check tolerance

cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm³/1000 strokes : 105.0

Tolerance

cm³/1000 strokes : + - 5.0

Check tolerance
cm³/1000S. : + 8.0

LOW IDLE

Rated speed rpm : 350

Rack travel in mm : 5.75

Tolerance mm : + 0.25

Del. quantity

cm³/1000 strokes : 11.0

Tolerance

cm³/1000 strokes : + 2.0

Check tolerance

cm³/1000S. : + 4.5

Spred

Tolerance

cm³/1000 strokes : 3.5

Check tolerance

cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 08.10.97
Test oil : ISO 4113

Combination No. : 0 402 076 817

Injection pump
Pump designation : PES6P120A720RS3367
EP type number : 0 412 026 788

Governor
Governor design. : RSV525...1000P2A640
: -1
Governor no. : 0 421 833 604

Cust. part No. : RE71286

Customer-spec. information

Customer : DEERE
Motor : 6081HT001
Power KW : 186.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 457 413 010

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015

Outside diameter : 6.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Start of delivery mark

*NW after s.o.d. : 7.50
Tolerance : + 0.50
Check
tolerance *NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

and maximum rack
travel : 14.00
Difference ° CS : 2.50

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 12.90
 Tolerance mm : + - 0.05
 Del. quantity cm³/1000 strokes : 174.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spreed
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 6.5

 Rated speed rpm : 525
 Rack travel in mm : 5.00
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 26.0
 Tolerance cm³/1000 strokes : + - 2.0
 Check tolerance cm³/1000S. : + - 4.5
 Spreed
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + - 0.20
 governor spring
 pre-tension
 click setting x : 3.00

FULL LOAD DELIVERY AT FULL LOAD STOP
 Rated speed rpm : 1000
 Aneroid pressure hPa : 1400
 Del. quantity cm³/1000 strokes : 174.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spreed
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 6.5

CONTROL LEVER

control lever
 position degree : 89.0
 tolerance degree : + - 4.0
RATED SPEED
 rack travel mm : 11.80
 Rated speed rpm : 1070
 Tolerance 1/min : + - 5
 rack travel mm : 4.00
 Rated speed rpm : 1115
 Tolerance 1/min : + - 5
 rack travel mm : 0.85
 Tolerance mm : + - 0.55
 Rated speed rpm : 1200
 rack travel mm : 4.00
 Rated speed rpm : 1115
 Tolerance 1/min : + - 15

LOW IDLE

control lever
 position degree : 72.0
 tolerance degree : + - 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 525
 rack travel mm : 4.50
 Tolerance mm : + - 0.10

Rated speed rpm : 100
CRT mm min. : > 19.00

Testing:

Rated speed rpm : 525
rack travel mm : 5.00
Tolerance mm : + - 0.10

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 12.90
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 13.60
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1400

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 12.25
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 975
rack travel mm : 13.30
Tolerance mm : + - 0.20

Pressure hPa : 830
rack travel mm : 12.60
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1400
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 193.5
Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 168.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 105.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 25.0

LOW IDLE

Rated speed rpm : 525
Rack travel in mm : 5.00
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 07.09.95
Test oil : ISO 4113

Combination No. : 0 402 746 600

Injection pump
Pump designation : PES6P120A320LS7322
EP type number : 0 412 726 904

Governor
Governor design. : RQV350...1000PA1135
: -1K
Governor no. : 0 421 815 473

Cust. part No. : 1824945C91

Customer-spec. information
Customer : NAVISTAR
Motor : DT-531
Power KW : 206.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 076

Inlet press. bar : 2.8
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 2.90
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 11.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Start of delivery blocking

Tolerance : + 0.10
Check tolerance °NW : + 0.23

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 14.55
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 220.0

Tolerance
 cm³/1000 strokes : + 1.0

 Check tolerance
 cm³/1000S. : + 4.0

 Spred

 Tolerance
 cm³/1000 strokes : 8.0

 Check tolerance
 cm³/1000S. : 12.0

Rated speed rpm : 350

 Rack travel in mm : 5.80
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 21.0
 Tolerance
 cm³/1000 strokes : + 3.0
 Check tolerance
 cm³/1000S. : + 5.0
 Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1066
 guide sleeve
 travel mm : 9.62
 Tolerance mm : + 0.25

 Rated speed rpm : 350
 guide sleeve
 travel mm : 1.95
 Tolerance mm : + 0.25

 Rated speed rpm : 737
 guide sleeve
 travel mm : 6.27
 Tolerance mm : + 0.25

 Rated speed rpm : 383
 guide sleeve
 travel mm : 2.46
 Tolerance mm : + 0.25

 Rated speed rpm : 433

guide sleeve
 travel mm : 3.17
 Tolerance mm : + 0.25

 Rated speed rpm : 490
 guide sleeve
 travel mm : 4.00
 Tolerance mm : + 0.25

 Rated speed rpm : 1330
 guide sleeve
 travel mm : 13.50
 Tolerance mm : + 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1200
 Del. quantity
 cm³/1000 strokes : 220.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

CONTROL LEVER

control lever
 position degree : 119.0
 tolerance degree : + 6.0

 RATED SPEED
 rack travel mm : 13.50
 Rated speed rpm : 1065
 Tolerance 1/min : + 15

 rack travel mm : 4.00
 Rated speed rpm : 1185
 Tolerance 1/min : + 5

 rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1225

LOW IDLE

control lever
position degree : 75.0
tolerance degree : +- 6.0

Setting point w/out bumper spring

Rated speed rpm : 275

CRT mm min. : > 8.00

Testing:

Rated speed rpm : 350
rack travel mm : 5.80
Tolerance mm : +- 0.10

Rated speed rpm : 425

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 14.55
Tolerance mm : +- 0.05

Rated speed rpm : 650
rack travel mm : 13.30
Tolerance mm : +- 0.10

Rated speed rpm : 800
rack travel mm : 13.80
Tolerance mm : +- 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Pressure hPa : 1200

Rated speed rpm : 1000
Pressure hPa : -
rack travel mm : 10.10
Tolerance mm : +- 0.20

MEASUREMENT

Pressure hPa : 700
rack travel mm : 13.45
Tolerance mm : +- 0.20

Pressure hPa : 330
rack travel mm : 11.35
Tolerance mm : +- 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 280
Check speed 1/min : > 80
Check speed 1/min : < 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1200
Rated speed rpm : 800
Del. quantity cm3/1000 strokes : 215.5
Tolerance cm3/1000 strokes : +- 3.0
Check tolerance cm3/1000S. : +- 6.0
Spread Tolerance cm3/1000 strokes : 8.0
Check tolerance cm3/1000S. : 12.0

Aneroid pressure hPa : -
Rated speed rpm : 1000
Del. quantity cm3/1000 strokes : 113.5
Tolerance cm3/1000 strokes : +- 2.0
Check tolerance cm3/1000S. : +- 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 21.00
Tolerance mm : +- 0.50
Del. quantity cm3/1000 strokes : 127.0
Tolerance cm3/1000 strokes : +- 20.0
Check tolerance cm3/1000S. : +- 30.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.80

Tolerance mm : +— 0.10
Del. quantity
cm³/1000 strokes : 21.0
Tolerance
cm³/1000 strokes : +— 3.0
Check tolerance
cm³/1000S. : +— 5.0
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 614

Injection pump
Pump designation : PES6P120A320RS7419
EP type number : 0 412 726 961

Governor
Governor design. : RQV300...1300PA1288K
Governor no. : 0 421 815 519

Cust. part No. : 386 6799

Customer-spec. information

Customer : CDC
Motor : 5CTA
Power KW : 320.4

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05

Check
tolerance mm : + 0.10

Rack travel in mm : 9.50
Tolerance mm : + 1.00

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Start of delivery blocking

*NW after s.o.d. : 12.25
Tolerance : + 0.50

Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1300

Rated speed rpm : 300

Rack travel in mm : 6.20

Del. quantity
 cm³/1000 strokes : 26.0
 Tolerance
 cm³/1000 strokes : + - 3.0
 Check tolerance
 cm³/1000S. : + - 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1372
 guide sleeve
 travel mm : 9.96
 Tolerance mm : + - 0.15

 Rated speed rpm : 300
 guide sleeve
 travel mm : 1.29
 Tolerance mm : + - 0.20

 Rated speed rpm : 917
 guide sleeve
 travel mm : 6.76
 Tolerance mm : + - 0.25

 Rated speed rpm : 590
 guide sleeve
 travel mm : 4.95
 Tolerance mm : + - 0.25

 Rated speed rpm : 1710
 guide sleeve
 travel mm : 13.50
 Tolerance mm : + - 0.50

CONTROL LEVER

control lever
 position degree : 120.0
 tolerance degree : + - 4.0

 RATED SPEED
 rack travel mm : 13.00
 Rated speed rpm : 1365
 Tolerance 1/min : + - 5

 rack travel mm : 4.00
 Rated speed rpm : 1520
 Tolerance 1/min : + - 15

rack travel mm : 0.50
 Tolerance mm : + - 0.50
 Rated speed rpm : 1600

LOW IDLE

control lever
 position degree : 71.0
 tolerance degree : + - 4.0

Control lever difference
 Grad : 49.0
 tolerance degree : + - 6.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 7.00

Testing:

Rated speed rpm : 300
 rack travel mm : 6.20

Rated speed rpm : 450

TORQUE CONTROL

Rated speed rpm : 1300

Rated speed rpm : 900
 rack travel mm : 13.60
 Tolerance mm : + - 0.10

Rated speed rpm : 600
 rack travel mm : 13.05
 Tolerance mm : + - 0.20

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1300
 Pressure hPa : 1500

Rated speed rpm : 1000
 Pressure hPa : -
 rack travel mm : 9.95
 Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 1300
Pressure hPa : 890
rack travel mm : 13.00
Tolerance mm : + - 0.20

Pressure hPa : 400
rack travel mm : 10.80
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 900
Del. quantity
cm³/1000 strokes : 241.0
Tolerance
cm³/1000 strokes : + - 6.0
Check tolerance
cm³/1000S. : + - 8.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 123.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 9.10
Del. quantity
cm³/1000 strokes : 123.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 25.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.20
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 5.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 400 074 778

Injection pump
Pump designation : PES4M60C320RS185
EP type number : 0 410 064 006

Governor
Governor design. : RSF360/1900M79
Governor no. : 0 420 021 280

Cust. part No. :

Customer-spec. information

Customer : MB-PKW
Motor : OM601 023 LA
Power KW : 72.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 2.05
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 21.00
Tolerance mm : + - 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 17.00
Tolerance : + - 0.20
Check
tolerance *NW : + - 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.80
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 59.5

Tolerance
cm³/1000 strokes : + - 0.7

Check tolerance
cm³/1000S. : + - 1.7

Spread
Tolerance
cm³/1000 strokes : 3.0

Check tolerance cm³/1000S. : 3.5
 Rated speed rpm : 360
 Rack travel in mm : 5.90
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 6.5
 Tolerance cm³/1000 strokes : + - 0.5
 Spread
 Tolerance cm³/1000 strokes : 1.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

IDLE STAGE

Rack travel in mm : 6.00
 Tolerance mm : + - 0.10

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Ref. pressure ALDA / ADA hPa : 1850
 Del. quantity cm³/1000 strokes : 59.5
 Tolerance cm³/1000 strokes : + - 0.7
 Check tolerance cm³/1000S. : + - 1.7
 Spread
 Tolerance cm³/1000 strokes : 3.0
 Check tolerance cm³/1000S. : 3.5

RATED SPEED

control lever position degree : 50.0
 Rated speed rpm : 2200
 rack travel mm : 8.30
 Tolerance mm : + - 0.20
 Rated speed rpm : 2600
 rack travel mm : 0.50
 Tolerance mm : + - 0.50

SET IDLE CONTROL LEVER POSITION

Rated speed rpm : 900
 CRT mm max. : 1.95

LOW IDLE

control lever position degree : 12.0
 tolerance degree : + - 2.0

Setting point w/out bumper spring
 Rated speed rpm : 360
 rack travel mm : 5.90

SET IDLE AUXILIARY SPRING

Rated speed rpm : 500
 rack travel mm : 4.00
 Tolerance mm : + - 0.10

Load pick-up

Rated speed rpm : 200
 rack travel mm : 12.20
 Rated speed rpm : 900
 CRT mm max. : 1.95
 rack travel mm : 5.90
 Rated speed rpm : 360

TORQUE CONTROL

Rated speed rpm : 900
 rack travel mm : 13.80
 Tolerance mm : + - 0.05

Rated speed rpm : 1500
 rack travel mm : 12.90
 Tolerance mm : + - 0.10

Rated speed rpm : 1900
 rack travel mm : 12.15
 Tolerance mm : + - 0.15

Rated speed rpm : 900
 rack travel mm : 11.15
 Tolerance mm : + - 0.10

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm : 900
 Ref. pressure ALDA / ADA hPa : 1600
 rack travel mm : -0.25
 Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 900
 Ref. pressure ALDA / ADA hPa : 1100
 rack travel mm : -2.65
 Tolerance mm : + - 0.10

Ref. pressure ALDA / ADA hPa : 750
 rack travel mm : -4.30
 Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Ref. pressure ALDA / ADA hPa : 1850
 Rated speed rpm : 1500
 Del. quantity cm3/1000 strokes : 56.4
 Tolerance

cm3/1000 strokes : + - 1.0
 Check tolerance cm3/1000S. : + - 2.0
 Spread
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance cm3/1000S. : 3.5

Ref. pressure ALDA / ADA hPa : 1850
 Rated speed rpm : 1900
 Spread

Del. quantity cm3/1000 strokes : 54.0
 Tolerance
 cm3/1000 strokes : + - 1.2
 Check tolerance cm3/1000S. : + - 2.2
 Spread

Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance cm3/1000S. : 3.5

Ref. pressure ALDA / ADA hPa : 1100
 Rated speed rpm : 900

Del. quantity cm3/1000 strokes : 43.0
 Tolerance
 cm3/1000 strokes : + - 0.7
 Check tolerance cm3/1000S. : + - 1.7
 Spread
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance cm3/1000S. : 3.5

Ref. pressure ALDA / ADA hPa : 1100
 Rated speed rpm : 900
 Del. quantity cm3/1000 strokes : 43.0
 Tolerance
 cm3/1000 strokes : + - 0.7
 Check tolerance cm3/1000S. : + - 1.7
 Spread
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance cm3/1000S. : 3.5

HIGH IDLE

Ref. pressure ALDA / ADA hPa : 1850
 Rated speed rpm : 2200
 rack travel mm : 8.30
 Tolerance mm : + - 0.20
 Del. quantity cm3/1000 strokes : 31.0
 Tolerance
 cm3/1000 strokes : + - 2.2
 Check tolerance cm3/1000S. : + - 3.2
 Spread
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance cm3/1000S. : 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : > 20.10
 Del. quantity cm3/1000 strokes : 54.8
 Tolerance
 cm3/1000 strokes : + - 6.0
 Check tolerance cm3/1000S. : + - 7.0
 Spread

Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 8.5

LOW IDLE

Rated speed rpm : 360
rack travel mm : 5.90
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 7.8
Check tolerance
cm³/1000S. : + - 2.3
Spread
Check tolerance
cm³/1000S. : 1.5

control lever
position degree : > 42.00

control lever
position degree : < 39.50

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever
position degree : 12.0
tolerance degree : + - 2.0

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Rated speed rpm : 360
Rack travel in mm : 13.80
Tolerance mm : + - 0.70
Del. quantity
cm³/1000 strokes : 54.5
Tolerance
cm³/1000 strokes : + - 3.5
Current A : 1.80
Rated speed rpm : 2600
Rack travel in mm : 0.50

Tolerance mm : + - 0.50
Current short-
duration A : 3.00
Starting test
Rated speed rpm : 100
Current A : 1.80

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 360
Vacuum hPa : -450.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 400 074 876

Injection pump
Pump designation : PES4M60C320RS185
EP type number : 0 410 064 006

Governor
Governor design. : RSF360/1900M84
Governor no. : 0 420 021 287

Cust. part No. :

Customer-spec. information

Customer : MB-PKW
Motor : OM601 D23 LA
Power KW : 72.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.05
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 21.00
Tolerance mm : + 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 17.00
Tolerance : + 0.20
Check
tolerance *NW : + 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.80
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 59.5

Tolerance
cm³/1000 strokes : + 0.7

Check tolerance
cm³/1000s. : + 1.7

Spread

| | | | | | |
|--|---|----------|-----------------------------------|---|----------|
| Tolerance cm ³ /1000 strokes | : | 3.0 | Tolerance mm | : | + - 0.50 |
| Check tolerance cm ³ /1000S. | : | 3.5 | SET IDLE CONTROL LEVER POSITION | | |
| Rated speed rpm | : | 360 | Rated speed rpm | : | 900 |
| Rack travel in mm | : | 5.90 | CRT mm max. | : | 1.95 |
| Tolerance mm | : | + - 0.10 | LOW IDLE | | |
| Del. quantity cm ³ /1000 strokes | : | 6.5 | control lever position degree | : | 12.0 |
| Tolerance cm ³ /1000 strokes | : | + - 0.5 | tolerance degree | : | + - 2.0 |
| Spred | | | Setting point w/out bumper spring | | |
| Tolerance cm ³ /1000 strokes | : | 1.0 | Rated speed rpm | : | 360 |
| (B) SETTING OF INJECTION PUMP WITH GOVERNOR | | | rack travel mm | : | 5.90 |
| IDLE STAGE | | | SET IDLE AUXILIARY SPRING | | |
| Rack travel in mm | : | 6.00 | Rated speed rpm | : | 500 |
| Tolerance mm | : | + - 0.10 | rack travel mm | : | 4.00 |
| FULL LOAD DELIVERY AT FULL LOAD STOP | | | Tolerance mm | : | + - 0.10 |
| Rated speed rpm | : | 900 | Load pick-up | | |
| Ref. pressure ALPA / ADA hPa | : | 1850 | Rated speed rpm | : | 200 |
| Del. quantity cm ³ /1000 strokes | : | 59.5 | rack travel mm | : | 12.20 |
| Tolerance cm ³ /1000 strokes | : | + - 0.7 | Rated speed rpm | : | 900 |
| Check tolerance cm ³ /1000S. | : | + - 1.7 | CRT mm max. | : | 1.95 |
| Spred | | | rack travel mm | : | 5.90 |
| Tolerance cm ³ /1000 strokes | : | 3.0 | Rated speed rpm | : | 360 |
| Check tolerance cm ³ /1000S. | : | 3.5 | TORQUE CONTROL | | |
| RATED SPEED | | | Rated speed rpm | : | 900 |
| control lever position degree | : | 50.0 | rack travel mm | : | 13.80 |
| Rated speed rpm | : | 2150 | Tolerance mm | : | + - 0.05 |
| rack travel mm | : | 6.60 | Rated speed rpm | : | 1500 |
| Tolerance mm | : | + - 0.20 | rack travel mm | : | 12.90 |
| Rated speed rpm | : | 2600 | Tolerance mm | : | + - 0.10 |
| rack travel mm | : | 0.50 | Rated speed rpm | : | 1900 |
| | | | rack travel mm | : | 12.15 |
| | | | Tolerance mm | : | + - 0.15 |
| | | | Rated speed rpm | : | 500 |
| | | | rack travel mm | : | 15.30 |
| | | | Tolerance mm | : | + - 0.30 |
| | | | Rated speed rpm | : | 900 |

| | | | | | |
|--|---|--------|--|---|--------|
| rack travel mm | : | 11.15 | Check tolerance cm ³ /1000S. | : | 3.5 |
| Tolerance mm | : | + 0.10 | | | |
| <hr/> | | | | | |
| ADJUSTMENT TEST ADA/ALDA | | | | | |
| SETTING | | | | | |
| Rated speed rpm | : | 900 | Ref. pressure ALDA / ADA hPa | : | 1100 |
| Ref. pressure ALDA / ADA hPa | : | 1600 | Rated speed rpm | : | 900 |
| rack travel mm | : | -0.25 | Del. quantity cm ³ /1000 strokes | : | 43.0 |
| Tolerance mm | : | + 0.20 | Tolerance cm ³ /1000 strokes | : | + 0.7 |
| <hr/> | | | | | |
| MEASUREMENT | | | | | |
| Rated speed rpm | : | 900 | Check tolerance cm ³ /1000S. | : | + 1.7 |
| Ref. pressure ALDA / ADA hPa | : | 1100 | Spread | | |
| rack travel mm | : | -2.65 | Tolerance cm ³ /1000 strokes | : | 3.0 |
| Tolerance mm | : | + 0.10 | Check tolerance cm ³ /1000S. | : | 3.5 |
| Ref. pressure ALDA / ADA hPa | : | 750 | <hr/> | | |
| rack travel mm | : | -4.30 | Ref. pressure ALDA / ADA hPa | : | 1850 |
| Tolerance mm | : | + 0.20 | Rated speed rpm | : | 500 |
| <hr/> | | | | | |
| FUEL DELIVERY CHARACTERISTICS | | | | | |
| Ref. pressure ALDA / ADA hPa | : | 1850 | Del. quantity cm ³ /1000 strokes | : | 64.3 |
| Rated speed rpm | : | 1500 | Tolerance cm ³ /1000 strokes | : | + 2.0 |
| Del. quantity cm ³ /1000 strokes | : | 56.4 | Check tolerance cm ³ /1000S. | : | + 3.0 |
| Tolerance cm ³ /1000 strokes | : | + 1.0 | Spread | | |
| Check tolerance cm ³ /1000S. | : | + 2.0 | Tolerance cm ³ /1000 strokes | : | 3.0 |
| Spread | | | Check tolerance cm ³ /1000S. | : | 3.5 |
| Tolerance cm ³ /1000 strokes | : | 3.0 | <hr/> | | |
| Check tolerance cm ³ /1000S. | : | 3.5 | Ref. pressure ALDA / ADA hPa | : | 1100 |
| Ref. pressure ALDA / ADA hPa | : | 1850 | Rated speed rpm | : | 900 |
| Rated speed rpm | : | 1900 | Del. quantity cm ³ /1000 strokes | : | 43.0 |
| Spread | | | Tolerance cm ³ /1000 strokes | : | + 0.7 |
| Del. quantity cm ³ /1000 strokes | : | 54.0 | Check tolerance cm ³ /1000S. | : | + 1.7 |
| Tolerance cm ³ /1000 strokes | : | + 1.2 | Spread | | |
| Check tolerance cm ³ /1000S. | : | + 2.2 | Tolerance cm ³ /1000 strokes | : | 3.0 |
| Spread | | | Check tolerance cm ³ /1000S. | : | 3.5 |
| Tolerance cm ³ /1000 strokes | : | 3.0 | <hr/> | | |
| HIGH IDLE | | | | | |
| Ref. pressure ALDA / ADA hPa | : | 1850 | Ref. pressure ALDA / ADA hPa | : | 1850 |
| Rated speed rpm | : | 2150 | Rated speed rpm | : | 2150 |
| rack travel mm | : | 6.60 | Tolerance mm | : | + 0.20 |
| Tolerance mm | : | + 0.20 | Del. quantity cm ³ /1000 strokes | : | 21.4 |
| Del. quantity cm ³ /1000 strokes | : | + 2.2 | Tolerance cm ³ /1000 strokes | : | + 2.2 |

Check tolerance cm³/1000s. : + 3.2
Spred
Tolerance cm³/1000 strokes : 3.0
Check tolerance cm³/1000s. : 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : > 20.10
Del. quantity cm³/1000 strokes : 54.8
Tolerance cm³/1000 strokes : + 6.0
Check tolerance cm³/1000s. : + 7.0
Spred
Tolerance cm³/1000 strokes : 8.0
Check tolerance cm³/1000s. : 8.5

LOW IDLE

Rated speed rpm : 360
rack travel mm : 5.90
Tolerance mm : + 0.10
Del. quantity cm³/1000 strokes : 7.8
Check tolerance cm³/1000s. : + 2.3
Spred
Check tolerance cm³/1000s. : 1.5

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever position degree : 12.0
tolerance degree : + 2.0

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Rated speed rpm : 360
Rack travel in mm : 13.80
Tolerance mm : + 0.70

Del. quantity cm³/1000 strokes : 54.5
Tolerance cm³/1000 strokes : + 3.5
Current A : 1.80
Rated speed rpm : 2600
Rack travel in mm : 0.50
Tolerance mm : + 0.50
Current short-duration A : 3.00
Starting test
Rated speed rpm : 100
Current A : 1.80

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 360
Vacuum hPa : -450.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 400 074 883

Injection pump
Pump designation : PES4M60C320RS185
EP type number : 0 410 064 006

Governor
Governor design. : RSF375/1900M78
Governor no. : 0 420 021 274

Cust. part No. :

Customer-spec. information
Customer : MB-PKW
Motor : OM601 D23 LA
Power KW : 72.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.05
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 21.00
Tolerance mm : + 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 17.00
Tolerance : + 0.20
Check tolerance *NW : + 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.80
Tolerance mm : + 0.05

Del. quantity cm³/1000 strokes : 59.5

Tolerance cm³/1000 strokes : + 0.7

Check tolerance cm³/1000S. : + 1.7

Spread Tolerance cm³/1000 strokes : 3.0

Check tolerance : 3.5
 cm³/1000S.

 Rated speed rpm : 375

 Rack travel in mm : 5.90
 Tolerance mm : + - 0.10
 Del. quantity
 cm³/1000 strokes : 6.5
 Tolerance
 cm³/1000 strokes : + - 0.5
 Spread
 Tolerance
 cm³/1000 strokes : 1.0

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

IDLE STAGE

Rack travel in mm : 6.00
 Tolerance mm : + - 0.10

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Ref. pressure
 ALDA / ADA hPa : 1850
 Del. quantity
 cm³/1000 strokes : 59.5
 Tolerance
 cm³/1000 strokes : + - 0.7
 Check tolerance
 cm³/1000S. : + - 1.7
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

RATED SPEED

control lever
 position degree : 50.0

 Rated speed rpm : 2200
 rack travel mm : 8.30
 Tolerance mm : + - 0.20

 Rated speed rpm : 2600
 rack travel mm : 0.50
 Tolerance mm : + - 0.50

SET IDLE CONTROL LEVER POSITION

Rated speed rpm : 900

 CRT mm max. : 1.95

LOW IDLE

control lever
 position degree : 12.0
 tolerance degree : + - 2.0

Setting point w/out bumper spring
 Rated speed rpm : 375
 rack travel mm : 5.90

SET IDLE AUXILIARY SPRING

Rated speed rpm : 500
 rack travel mm : 4.20
 Tolerance mm : + - 0.10

Load pick-up

Rated speed rpm : 200
 rack travel mm : 13.00

 Rated speed rpm : 900

 CRT mm max. : 1.95

 rack travel mm : 5.90
 Rated speed rpm : 375

TORQUE CONTROL

Rated speed rpm : 900
 rack travel mm : 13.80
 Tolerance mm : + - 0.05

Rated speed rpm : 1500
 rack travel mm : 12.90
 Tolerance mm : + - 0.10

Rated speed rpm : 1900
 rack travel mm : 12.15
 Tolerance mm : + - 0.10

Rated speed rpm : 900
 rack travel mm : 11.15
 Tolerance mm : + - 0.10

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm : 900
 Ref. pressure
 ALDA / ADA hPa : 1600
 rack travel mm : -0.25
 Tolerance mm : \pm 0.20

MEASUREMENT

Rated speed rpm : 900
 Ref. pressure
 ALDA / ADA hPa : 1100
 rack travel mm : -2.65
 Tolerance mm : \pm 0.10

Ref. pressure
 ALDA / ADA hPa : 750
 rack travel mm : -4.30
 Tolerance mm : \pm 0.20

FUEL DELIVERY CHARACTERISTICS

Ref. pressure
 ALDA / ADA hPa : 1850
 Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : 56.4
 Tolerance
 cm³/1000 strokes : \pm 1.0
 Check tolerance
 cm³/1000S. : \pm 2.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

Ref. pressure
 ALDA / ADA hPa : 1850
 Rated speed rpm : 1900
 Spread
 Del. quantity
 cm³/1000 strokes : 54.0
 Tolerance
 cm³/1000 strokes : \pm 1.2
 Check tolerance
 cm³/1000S. : \pm 2.2
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

Ref. pressure
 ALDA / ADA hPa : 1100
 Rated speed rpm : 900

Del. quantity
 cm³/1000 strokes : 43.0
 Tolerance
 cm³/1000 strokes : \pm 0.7
 Check tolerance
 cm³/1000S. : \pm 1.7
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

Ref. pressure
 ALDA / ADA hPa : 1100
 Rated speed rpm : 900
 Del. quantity
 cm³/1000 strokes : 43.0
 Tolerance
 cm³/1000 strokes : \pm 0.7
 Check tolerance
 cm³/1000S. : \pm 1.7
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

HIGH IDLE

Ref. pressure
 ALDA / ADA hPa : 1850
 Rated speed rpm : 2200
 rack travel mm : 8.30
 Tolerance mm : \pm 0.20
 Del. quantity
 cm³/1000 strokes : 31.0
 Tolerance
 cm³/1000 strokes : \pm 2.2
 Check tolerance
 cm³/1000S. : \pm 3.2
 Spread
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : > 20.10
 Del. quantity
 cm³/1000 strokes : 54.8
 Tolerance
 cm³/1000 strokes : \pm 6.0
 Check tolerance
 cm³/1000S. : \pm 7.0
 Spread

Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 8.5

End of test specification sheet

LOW IDLE

Rated speed rpm : 375
Del. quantity
cm³/1000 strokes : 7.8
Check tolerance
cm³/1000S. : + 2.3
Spread
Check tolerance
cm³/1000S. : 1.5

control lever
position degree : > 42.00

control lever
position degree : < 39.50

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever
position degree : 12.0
tolerance degree : + 2.0

Rated speed rpm : 425

Rack travel in mm : 7.65
Tolerance mm : + 0.80
Del. quantity
cm³/1000 strokes : 17.3
Tolerance
cm³/1000 strokes : + 4.5
Check tolerance
cm³/1000S. : + 5.5
Vacuum hPa : 450.0

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 375
Vacuum hPa : -450.0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 401 856 158

Injection pump
Pump designation : PE6P110A721RS369
EP type number : 0 411 816 121

Governor
Governor design. : RQV250...1300PA413
: -4
Governor no. : 0 421 813 732

Cust. part No. :

Customer-spec. information

Customer : HAEP
Motor : WD615.61/71
Power KW : 191.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0
x inside diameter : 1.5
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1300

Rack travel in mm : 13.85
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 146.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 250

Rack travel in mm : 8.80
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 21.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 5.5

Spred
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 7.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1340
guide sleeve
travel mm : 8.70

Tolerance mm : + 0.10

Rated speed rpm : 250
guide sleeve
travel mm : 0.70

Tolerance mm : + 0.20

Rated speed rpm : 500
guide sleeve
travel mm : 2.70

Tolerance mm : + 0.30

Rated speed rpm : 800
guide sleeve
travel mm : 4.70

Tolerance mm : + 0.30

Rated speed rpm : 1450
guide sleeve
travel mm : 10.20
Tolerance mm : + 0.20

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1390

Rack travel in mm : 16.50
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1300
Aneroid pressure

hPa : 700

Del. quantity
cm³/1000 strokes : 146.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 106.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 12.80
Rated speed rpm : 1345
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1460
Tolerance 1/min : + 15

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 1550

LOW IDLE

control lever
position degree : 72.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 10.20

Testing:

Rated speed rpm : 250
rack travel mm : 8.80
Tolerance mm : + - 0.10

Rated speed rpm : 375

TORQUE CONTROL

Rated speed rpm : 1300
rack travel mm : 13.85
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 13.85
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 700
Pressure hPa : 700
rack travel mm : 13.85
Tolerance mm : + - 0.05

Rated speed rpm : 700
Pressure hPa : -
rack travel mm : 12.10
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 700

Pressure hPa : 320
rack travel mm : 13.00
Tolerance mm : + - 0.10

Pressure hPa : 390
rack travel mm : 13.55
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 170
Check speed 1/min : > 80
Check speed 1/min : < 190

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 700
Rated speed rpm : 700
Del. quantity cm³/1000 strokes : 135.0
Tolerance cm³/1000 strokes : + - 2.0
Check tolerance cm³/1000S. : + - 5.0

Aneroid pressure hPa : -
Rated speed rpm : 700
Del. quantity cm³/1000 strokes : 102.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity cm³/1000 strokes : 145.0
Tolerance cm³/1000 strokes : + - 10.0
Check tolerance cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 250
Rack travel in mm : 8.80
Tolerance mm : + - 0.10
Del. quantity cm³/1000 strokes : 21.0
Tolerance cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + 5.5
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.97
Test oil : ISO 4113

Combination No. : 0 402 046 864

Injection pump
Pump designation : PES6P120A320RS3337
: -1
EP type number : 0 412 026 772

Governor
Governor design. : RQV300...1250PA1149
: -1K
Governor no. : 0 421 815 421

Cust. part No. : CCEP 5142B 66-219

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 06-02-26 W4
Power KW : 155.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 084

Inlet press. bar : 2.5

Overflow quantity
min. l/h : 125
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089
Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : +- 1.0

Prestroke mm : 4.15
Tolerance mm : +- 0.05
Check tolerance mm : +- 0.10

Rack travel in mm : 13.00
Tolerance mm : +- 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Start of delivery mark

°NW after s.o.d. : -0.35
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack travel : 13.00

Difference • CS : 2.00

CRT ZERO POSITION

Rack travel in mm : 12.80
Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : 194.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : -8.30
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 22.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 5.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1328
guide sleeve
travel mm : 9.98

Tolerance mm : + 0.15

Rated speed rpm : 300
guide sleeve
travel mm : 1.31
Tolerance mm : + 0.20

Rated speed rpm : 876
guide sleeve
travel mm : 6.02
Tolerance mm : + 0.25

Rated speed rpm : 510
guide sleeve
travel mm : 3.59
Tolerance mm : + 0.25

Rated speed rpm : 1600
guide sleeve
travel mm : 13.50
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1415

Rack travel in mm : 12.15
Tolerance mm : + 2.03

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 194.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 296.0
tolerance degree : + 4.0

RATED SPEED

rack travel mm : -1.00
Rated speed rpm : 1312
Tolerance 1/min : + - 15

rack travel mm : -8.80
Rated speed rpm : 1440
Tolerance 1/min : + - 5

rack travel mm : -12.30
Tolerance mm : + - 0.50
Rated speed rpm : 1550

LOW IDLE

control lever
position degree : 245.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : < -7.50

Testing:

Rated speed rpm : 300
rack travel mm : -8.30
Tolerance mm : + - 0.10

Rated speed rpm : 400

TORQUE CONTROL

Rated speed rpm : 1250

Rated speed rpm : 850
rack travel mm : -1.75
Tolerance mm : + - 0.05

Rated speed rpm : 350
rack travel mm : -1.50
Tolerance mm : + - 0.30

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1000
Pressure hPa : 1000
rack travel mm : -1.40

Rated speed rpm : 1000

Pressure hPa : -
rack travel mm : -3.55
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 1000

Pressure hPa : 160
rack travel mm : -3.10
Tolerance mm : + - 0.15

Pressure hPa : 280
rack travel mm : -2.05
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 175
Rated speed rpm : < 240

Check
speed 1/min : > 155
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 850
Del. quantity
cm³/1000 strokes : 139.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 118.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 102.0

Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : -8.30
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 5.0
Speed
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.10.97
Test oil : ISO 4113

Combination No. : 0 402 610 805

Injection pump
Pump designation : PE12P120A500LS7916
EP type number : 0 412 620 850

Governor
Governor design. :
Governor no. :

Cust. part No. : 0280743802

Customer-spec. information

Customer : MTU
Motor : 12V183-02
Power KW : 455.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1/3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 240
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.35
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 12- 1- 5- 9- 8
: - 3- 4- 11- 10
: - 2- 6- 7

Phasing : 0-45-60-105-120
: -165-180-225-240
: -285-300-345

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check tolerance °NW : + 0.75

Barrel no. : 12

BASIC SETTING

Rated speed rpm : 750

Rack travel in mm : 7.80
 Tolerance mm : + 0.10

Del. quantity cm³/1000 strokes : 184.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0

Speed

Tolerance cm³/1000 strokes : 8.0

Check tolerance cm³/1000S. : 11.0

Rated speed rpm : 300
 Del. quantity cm³/1000 strokes : 18.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0

Speed

Tolerance cm³/1000 strokes : 10.0
 Check tolerance cm³/1000S. : 14.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 750
 Aneroid pressure hPa : -
 Del. quantity cm³/1000 strokes : 184.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0

Speed

Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 11.0

TORQUE CONTROL
 Rated speed rpm : 750
 rack travel mm : 7.80
 Tolerance mm : + 0.10

LOW IDLE

Rated speed rpm : 300
 Del. quantity cm³/1000 strokes : 18.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0

Speed

Tolerance cm³/1000 strokes : 10.0
 Check tolerance cm³/1000S. : 14.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.95
Test oil : ISO 4113

Combination No. : 0 402 646 623

Injection pump
Pump designation : PE6P120A320RS7288
: -10

EP type number : 0 412 626 918

Governor
Governor design. : RQV250...900PA1069
: -1

Governor no. : G 421 814 070

Cust. part No. : 866141 P04 v. 10/94

Customer-spec. information

Customer : PENTA
Motor : TAD 1030P

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Vibration
damper
(RoBo diaphragm) : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 457 413 010

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rack travel in mm : 7.70
Tolerance mm : + 0.30

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

| | | |
|-----------------|---|--------|
| Rated speed rpm | : | 949 |
| guide sleeve | | |
| travel mm | : | 7.39 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 250 |
| guide sleeve | | |
| travel mm | : | 1.12 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 657 |
| guide sleeve | | |
| travel mm | : | 5.07 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 315 |
| guide sleeve | | |
| travel mm | : | 1.98 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 365 |
| guide sleeve | | |
| travel mm | : | 2.63 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 420 |
| guide sleeve | | |
| travel mm | : | 3.17 |
| Tolerance mm | : | + 0.25 |
| | | |
| Rated speed rpm | : | 1290 |
| guide sleeve | | |
| travel mm | : | 11.50 |
| Tolerance mm | : | + 0.50 |

GUIDE SLEEVE POSITION

| | | |
|-------------------|---|--------|
| control lever | | |
| position degree | : | - 1 |
| Rated speed rpm | : | 1150 |
| | | |
| Rack travel in mm | : | 9.00 |
| Tolerance mm | : | + 3.00 |

CONTROL LEVER

| | | |
|------------------|---|-------|
| control lever | | |
| position degree | : | 119.0 |
| tolerance degree | : | + 4.0 |

| | | |
|-----------------|---|-------|
| RATED SPEED | | |
| rack travel mm | : | 12.45 |
| Rated speed rpm | : | 935 |
| Tolerance 1/min | : | + - 5 |

| | | |
|-----------------|---|--------|
| rack travel mm | : | 4.00 |
| Rated speed rpm | : | 1075 |
| Tolerance 1/min | : | + - 15 |

| | | |
|-----------------|---|----------|
| rack travel mm | : | 0.50 |
| Tolerance mm | : | + - 0.50 |
| Rated speed rpm | : | 1150 |

LOW IDLE

| | | |
|------------------|---|---------|
| control lever | | |
| position degree | : | 80.0 |
| tolerance degree | : | + - 4.0 |

Setting point w/out bumper spring

| | | |
|-----------------|---|--------|
| Rated speed rpm | : | 150 |
| CRT mm min. | : | > 9.00 |

Testing:

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 250 |
| rack travel mm | : | 7.70 |
| Tolerance mm | : | + - 0.30 |

| | | |
|-----------------|---|-----|
| Rated speed rpm | : | 350 |
|-----------------|---|-----|

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | 1500 |
| rack travel mm | : | 13.45 |
| Tolerance mm | : | + - 0.05 |

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | - |
| rack travel mm | : | 10.00 |
| Tolerance mm | : | + - 0.10 |

MEASUREMENT

| | | |
|-----------------|---|-----|
| Rated speed rpm | : | 500 |
|-----------------|---|-----|

Pressure hPa : 200
rack travel mm : 10.30
Tolerance mm : + - 0.10

Pressure hPa : 1090
rack travel mm : 13.15
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 176.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

LOW IDLE

Rack travel in mm : 7.70
Tolerance mm : + - 0.30

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 676

Injection pump
Pump designation : PE6P120A320RS7439
EP type number : 0 412 626 966

Governor
Governor design. : RQV235...1050PA1347
Governor no. : 0 421 814 194

Cust. part No. : 836354759

Customer-spec. information
Customer : SISU
Motor : 612 DWI EURO II
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 12.00
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 265.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 10.0

Rated speed rpm : 325

Rack travel in mm : 6.60
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 70.0

Tolerance
cm³/1000 strokes : + 4.0

Check tolerance
cm³/1000S. : + 6.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1108

guide sleeve
travel mm : 8.51
Tolerance mm : + 0.15

Rated speed rpm : 325

guide sleeve
travel mm : 1.18
Tolerance mm : + 0.20

Rated speed rpm : 730

guide sleeve
travel mm : 4.60
Tolerance mm : + 0.25

Rated speed rpm : 470

guide sleeve
travel mm : 2.76
Tolerance mm : + 0.25

Rated speed rpm : 1320

guide sleeve
travel mm : 11.50
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1174

Rack travel in mm : 11.00
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 265.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 10.0

CONTROL LEVER

control lever
position degree : 49.0
tolerance degree : + 4.0

control lever
position degree : 115.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 11.00
Rated speed rpm : 1095
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1180
Tolerance 1/min : + 15

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 1280

LOW IDLE

control lever

position degree : 83.0
tolerance degree : + - 4.0

control lever

position degree : 16.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 225

CRT mm min. : > 8.20

Testing:

Rated speed rpm : 325
rack travel mm : 6.60
Tolerance mm : + - 0.10

Rated speed rpm : 375

TORQUE CONTROL

Rated speed rpm : 700
rack travel mm : 12.00
Tolerance mm : + - 0.05

Rated speed rpm : 1050
rack travel mm : 12.00
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST**SETTING**

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 12.00
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 9.50
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 800
rack travel mm : 2.20

Tolerance mm : + - 0.20

Pressure hPa : 420
rack travel mm : 0.25
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 1050
Del. quantity
cm³/1000 strokes : 262.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 14.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 182.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 9.50
Tolerance mm : + - 0.20
Del. quantity
cm³/1000 strokes : 123.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : 6.60
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 6.0
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 700

Injection pump
Pump designation : PE6P120A320LS7917
EP type number : 0 412 626 972

Governor
Governor design. : RQV350...1050PA1366
Governor no. : 0 421 814 204

Cust. part No. : 0270744002

Customer-spec. information

Customer : MB-NFZ
Motor : OM401 LA
Power KW : 230.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 120
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 6- 3- 5- 2- 4-
: 1

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.90
 Tolerance mm : + - 0.05
 Del. quantity cm³/1000 strokes : 218.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0
 Rated speed rpm : 350
 Rack travel in mm : 5.00
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 19.0
 Tolerance cm³/1000 strokes : + - 3.0
 Check tolerance cm³/1000S. : + - 6.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1106
 guide sleeve travel mm : 8.02
 Tolerance mm : + - 0.15
 Rated speed rpm : 350
 guide sleeve travel mm : 1.48
 Tolerance mm : + - 0.20
 Rated speed rpm : 900
 guide sleeve travel mm : 5.69
 Tolerance mm : + - 0.25

Rated speed rpm : 570
 guide sleeve travel mm : 3.57
 Tolerance mm : + - 0.25
 Rated speed rpm : 1204
 guide sleeve travel mm : 10.00
 Tolerance mm : + - 0.25
 Rated speed rpm : 1300
 guide sleeve travel mm : 11.50
 Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
 Rated speed rpm : 1160

Rack travel in mm : 12.90
 Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 218.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever position degree : 116.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 12.90
 Rated speed rpm : 1095
 Tolerance 1/min : + - 5
 rack travel mm : 4.00
 Rated speed rpm : 1170

Tolerance 1/min : + 15
rack travel mm : 0.75
Tolerance mm : + 0.75
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 66.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 250
CRT mm min. : > 7.10

Testing:

Rated speed rpm : 350
rack travel mm : 5.00
Tolerance mm : + 0.10

Rated speed rpm : 390

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 13.90
Tolerance mm : + 0.05

Rated speed rpm : 700
rack travel mm : 14.30
Tolerance mm : + 0.05

Rated speed rpm : 970
rack travel mm : 14.10
Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : -

MEASUREMENT

Pressure hPa : 300
rack travel mm : 0.75
Tolerance mm : + 0.05

Pressure hPa : 650
Tolerance mm : + 0.10

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 270

Check
speed 1/min : > 80
Check
speed 1/min : < 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S : + 5.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 135.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

REDUCED QUANTITY

Aneroid pressure
hPa : 1000
Rated speed rpm : 1050
Del. quantity
cm³/1000 strokes : 163.0
Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000S. : + 5.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + 10.0
Check tolerance
cm³/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.00
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Speed
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 13.10.97
Test oil : ISO 4113

Combination No. : 0 402 648 919

Injection pump
Pump designation : PE8P120A320LS7843
EP type number : 0 412 628 859

Governor
Governor design. : RQV350...1050PA842
: -8
Governor no. : 0 421 813 952

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ
Motor : OM442 LA
Power KW : 320.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Overflow quantity
min. l/h : 110
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 019

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 067

Outside diameter : 6.0
x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 8- 7- 2- 6- 3
: - 5- 4- 1

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check tolerance °NW : + 0.75

Barrel no. : 8

BASIC SETTING

Rated speed rpm : 600

Rack travel in mm : 14.60
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 230.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 350

Rack travel in mm : 5.80
Tolerance mm : + 0.30

Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 6.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1270
guide sleeve
travel mm : 11.50
Tolerance mm : + 0.50

Rated speed rpm : 350
guide sleeve
travel mm : 1.00
Tolerance mm : + 0.20

Rated speed rpm : 510
guide sleeve
travel mm : 3.85
Tolerance mm : + 0.25

Rated speed rpm : 1100
guide sleeve
travel mm : 8.10
Tolerance mm : + 0.30

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1125

Rack travel in mm : 17.25
Tolerance mm : + 0.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 600
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 230.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 117.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 13.50
Rated speed rpm : 1095
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1175
Tolerance 1/min : + 15

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 65.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 7.40

Testing:

Rated speed rpm : 350
rack travel mm : 5.80
Tolerance mm : + 0.30

Rated speed rpm : 450

TORQUE CONTROL

Rated speed rpm : 600
rack travel mm : 14.60
Tolerance mm : + 0.10

Rated speed rpm : 1050
rack travel mm : 14.60
Tolerance mm : + 0.10

Rated speed rpm : 800
rack travel mm : 14.90
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 600
Pressure hPa : 1250
rack travel mm : 0.20
Tolerance mm : + 0.10

2-stage LDA setting

Rated speed rpm : 600
Pressure hPa : 1000

MEASUREMENT

Rated speed rpm : 600
Pressure hPa : 400
rack travel mm : -3.50
Tolerance mm : + 0.10
Pressure hPa : 550

rack travel mm : -2.20
Tolerance mm : + 0.10

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 270

Check speed 1/min : > 80
Check speed 1/min : < 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1500
Rated speed rpm : 1050
Del. quantity cm³/1000 strokes : 230.5
Tolerance cm³/1000 strokes : + 1.5
Check tolerance cm³/1000S. : + 4.5
Spread Tolerance cm³/1000 strokes : 8.0
Check tolerance cm³/1000S. : 12.0

Aneroid pressure hPa : 1500
Rated speed rpm : 800
Del. quantity cm³/1000 strokes : 238.0
Tolerance cm³/1000 strokes : + 2.0
Check tolerance cm³/1000S. : + 5.0
Spread Tolerance cm³/1000 strokes : 8.0
Check tolerance cm³/1000S. : 12.0

Aneroid pressure hPa : -
Rated speed rpm : 500
Del. quantity cm³/1000 strokes : 137.0
Tolerance cm³/1000 strokes : + 1.0
Check tolerance cm³/1000S. : + 4.0
Spread

Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 260.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 20.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.80
Tolerance mm : + 0.30
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spred
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 402 676 833

Injection pump
Pump designation : PE6P120A320RS7426
EP type number : 0 412 626 958

Governor
Governor design. : RSV300...1100P1A650
Governor no. : 0 421 833 567

Cust. part No. : 3826502 P04 v.06/97

Customer-spec. information

Customer : PENTA
Motor : TWD 1031 VE
Power KW : 235.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Vibration
damper
(RoBo diaphragm) : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 300
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.45
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 7.60
Tolerance mm : + 0.50
Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.00
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 292.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 11.0

Rated speed rpm : 300

Rack travel in mm : 4.90
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 22.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 6.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + 0.20

governor spring
pre-tension
click setting x : 5.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 292.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 11.0

CONTROL LEVER

control lever
position degree : 62.0
tolerance degree : + 4.0

control lever
position degree : 112.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 11.00
Rated speed rpm : 1080
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1125
Tolerance 1/min : + 15

rack travel mm : 0.85
Tolerance mm : + 0.55
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 80.0
tolerance degree : + 4.0

control lever
position degree : 30.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 300
rack travel mm : 4.40
Tolerance mm : + - 0.10

Testing:

Rated speed rpm : 300
rack travel mm : 4.90
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 390
Tolerance 1/min : + - 30

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 12.00
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 12.00
Tolerance mm : + - 0.10

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 12.00
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.60
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 900
rack travel mm : 4.00
Tolerance mm : + - 0.20

Pressure hPa : 200
rack travel mm : 0.25
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 328.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 9.0
Check tolerance
cm³/1000S. : 13.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 188.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 4.90
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 09.10.97
Test oil : ISO 4113

Combination No. : 0 402 676 840

Injection pump
Pump designation : PE6P120A32JLS7913
EP type number : 0 412 626 971

Governor
Governor design. : RSV550...1050P0A685
Governor no. : 0 421 833 608

Cust. part No. : 0270744202

Customer-spec. information

Customer : MB-NFZ
Motor : OM 441 LA
Power KW : 239.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 115
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 6- 3- 5- 2- 4-
: 1

Phasing : 0-60-120-180-240
: -300

Start of delivery mark

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1030

Rack travel in mm : 14.50
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 227.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 550

Rack travel in mm : 3.90
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + - 0.20

governor spring
pre-tension
click setting x : 1.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1030

Aneroid pressure
hPa : -

Del. quantity
cm³/1000 strokes : 227.0
Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 88.0
tolerance degree : + - 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 1070
rack travel mm : 13.50

Rated speed rpm : 1122
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1300

Rated speed rpm : 1071
rack travel mm : 13.50

Rated speed rpm : 1123
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1300

Rated speed rpm : 1072
rack travel mm : 13.50

Rated speed rpm : 1124
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1300

Rated speed rpm : 1073
rack travel mm : 13.50

Rated speed rpm : 1125
Tolerance 1/min : + - 4

rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + 0.55
Rated speed rpm : 1300

Rated speed rpm : 1074
rack travel mm : 13.50

Rated speed rpm : 1126
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + 0.55
Rated speed rpm : 1300

rack travel mm : 13.50

rack travel mm : 4.00

rack travel mm : 0.85
Tolerance mm : + 0.55

LOW IDLE

control lever
position degree : 67.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 450

CRT mm min. : > 8.50

Testing:

Rated speed rpm : 550
rack travel mm : 3.90
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 565
Tolerance 1/min : + 20

SET IDLE AUXILIARY SPRING

rack travel mm : 2.00

TORQUE CONTROL

Rated speed rpm : 1030
rack travel mm : 14.50
Tolerance mm : + 0.05

Rated speed rpm : 960
rack travel mm : 14.70
Tolerance mm : + 0.05

Rated speed rpm : 600
rack travel mm : 15.20
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1000
rack travel mm : 15.20
Tolerance mm : + 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.80
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 650
rack travel mm : 13.70
Tolerance mm : + 0.10

Pressure hPa : 450
rack travel mm : 11.75
Tolerance mm : + 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 260.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 159.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 250.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 550
Rack travel in mm : 3.90
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.10.97
Test oil : ISO 4113

Combination No. : 0 402 736 884

Injection pump
Pump designation : PES6F120A720/3LS7251
: -1
EP type number : 0 412 726 926

Governor
Governor design. : RQV300...100CPA952
: -12K
Governor no. : 0 421 815 407

Cust. part No. : 3-7399

Customer-spec. information

Customer : MAN
Motor : D2866LF09
Power KW : 309.0

TEST BENCH REQUIREMENTS

Inlet Line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.85
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 15.50
Tolerance mm : + 0.50

Firing order : 6- 2- 4- 1- 5-
: 3

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 6

BASIC SETTINGRated speed rpm : 900

Rack travel in mm : 13.95
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 294.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 10.0

Check tolerance
cm³/1000S. : 14.0

Rated speed rpm : 300

Rack travel in mm : 5.20
Tolerance mm : + - 0.10Del. quantity
cm³/1000 strokes : 32.0Tolerance
cm³/1000 strokes : + - 3.0Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 8.0Check tolerance
cm³/1000S. : 12.0

**(B) SETTING OF INJECTION PUMP
WITH GOVERNOR**

GUIDE SLEEVE TRAVELRated speed rpm : 1061
guide sleeve
travel mm : 10.46
Tolerance mm : + - 0.25Rated speed rpm : 300
guide sleeve
travel mm : 1.88

Tolerance mm : + - 0.25

Rated speed rpm : 764
guide sleeve
travel mm : 6.96
Tolerance mm : + - 0.25Rated speed rpm : 305
guide sleeve
travel mm : 1.88
Tolerance mm : + - 0.25Rated speed rpm : 355
guide sleeve
travel mm : 2.53
Tolerance mm : + - 0.25Rated speed rpm : 470
guide sleeve
travel mm : 3.67
Tolerance mm : + - 0.25Rated speed rpm : 1260
guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITIONcontrol lever
position degree : - 1
Rated speed rpm : 1120Rack travel in mm : 12.50
Tolerance mm : + - 2.00

FULL LOAD DELIVERY AT FULL LOAD STOPRated speed rpm : 900
Aneroid pressure
hPa : 1300
Del. quantity
cm³/1000 strokes : 294.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spred
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 14.0

CONTROL LEVER

control lever
position degree : 300.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 12.40
Rated speed rpm : 1045
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1140
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 252.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 6.70

Testing:

Rated speed rpm : 300
rack travel mm : 5.20
Tolerance mm : + - 0.10

Rated speed rpm : 330

TORQUE CONTROL

Rated speed rpm : 900
rack travel mm : 13.95
Tolerance mm : + - 0.05

Rated speed rpm : 1000
rack travel mm : 13.50
Tolerance mm : + - 0.10

Rated speed rpm : 750
rack travel mm : 13.40
Tolerance mm : + - 0.10

Rated speed rpm : 750
rack travel mm : 6.50
Tolerance mm : + - 0.10

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 900
Pressure hPa : 1300
rack travel mm : 13.95
Tolerance mm : + - 0.05

Rated speed rpm : 900
Pressure hPa : -
rack travel mm : 9.10
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 900
Pressure hPa : 720
rack travel mm : 11.90
Tolerance mm : + - 0.20

Pressure hPa : 220
rack travel mm : 9.45
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 240

Check
speed 1/min : > 80
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1300
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 269.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1300
Rated speed rpm : 750

Del. quantity
cm³/1000 strokes : 287.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 107.0
Tolerance
cm³/1000 strokes : + 5.0
Check tolerance
cm³/1000S. : + 8.0
Spred
Tolerance
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000S. : 14.0

End of test specification sheet

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 169.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Del. quantity
cm³/1000 strokes : 210.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 5.20
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 32.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.97
Test oil : ISO 4113

Combination No. : 0 402 744 804

Injection pump
Pump designation : PES4P120A320RS7402
EP type number : 0 412 724 804

Governor
Governor design. : RQV275...1200PA1257K
Governor no. : 0 421 813 494

Cust. part No. : CCEP 5154A 66-238

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 04-02-26 A4
Power KW : 100.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Overflow quantity
min. l/h : 125
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.10
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 13.00
Tolerance mm : + 0.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -0.30
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference
betw. rack trav.
mm : 21.00
and maximum rack
travel : 13.00
Difference ° CS : 2.40

CRT ZERO POSITION

Rack travel in mm : 13.40
Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 1200

Del. quantity
cm³/1000 strokes : 261.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : -8.90
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 33.0

Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000S. : + 6.0

Spred
Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

**(B) SETTING OF INJECTION PUMP
WITH GOVERNOR**

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1257
guide sleeve
travel mm : 9.18
Tolerance mm : + 0.15

Rated speed rpm : 325
guide sleeve
travel mm : 1.52
Tolerance mm : + 0.20

Rated speed rpm : 888
guide sleeve
travel mm : 6.57
Tolerance mm : + 0.25

Rated speed rpm : 560
guide sleeve
travel mm : 4.01
Tolerance mm : + 0.25

Rated speed rpm : 1650
guide sleeve
travel mm : 13.50
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1473

Rack travel in mm : 12.40
Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1200
Aneroid pressure
hPa : 1200
Del. quantity
cm³/1000 strokes : 261.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 296.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1245

Tolerance 1/min : + 5
 rack travel mm : -9.40
 Rated speed rpm : 1405
 Tolerance 1/min : + 15
 rack travel mm : -12.90
 Tolerance mm : + 0.50
 Rated speed rpm : 1500

LOW IDLE

control lever
 position degree : 250.0
 tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 225

CRT mm min. : > -7.40

Testing:

Rated speed rpm : 325
 rack travel mm : -8.90
 Tolerance mm : + 0.10

Rated speed rpm : 390

TORQUE CONTROL

Rated speed rpm : 1200

Rated speed rpm : 850
 rack travel mm : -1.00
 Tolerance mm : + 0.10

Rated speed rpm : 700
 rack travel mm : -6.00
 Tolerance mm : + 0.20

Rated speed rpm : 700
 rack travel mm : -1.80
 Tolerance mm : + 0.20

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1200
 Pressure hPa : 1200

Rated speed rpm : 1200
 Pressure hPa : -
 rack travel mm : -3.20
 Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1200
 Pressure hPa : 200
 rack travel mm : -2.40
 Tolerance mm : + 0.20

Pressure hPa : 440
 rack travel mm : -1.10
 Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 130
 Rated speed rpm : < 275
 Check
 speed 1/min : > 110
 Check
 speed 1/min : < 285

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
 hPa : 1200
 Rated speed rpm : 850
 Del. quantity
 cm³/1000 strokes : 249.0
 Tolerance
 cm³/1000 strokes : + 3.0
 Check tolerance
 cm³/1000S. : + 6.0

Aneroid pressure
 hPa : -
 Rated speed rpm : 700
 Del. quantity
 cm³/1000 strokes : 153.0
 Tolerance
 cm³/1000 strokes : + 4.0
 Check tolerance
 cm³/1000S. : + 8.0

Aneroid pressure
 hPa : -
 Rated speed rpm : 1200
 Del. quantity
 cm³/1000 strokes : 183.0

Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 100.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : -8.90
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 33.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 6.0
Speed
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.97
Test oil : ISO 4113

Combination No. : 0 402 744 808

Injection pump
Pump designation : PES4P120A320RS7402
EP type number : 0 412 724 804

Governor
Governor design. : RQV275...1200PA1257
: -1K
Governor no. : 0 421 815 553

Cust. part No. : CCEP5166 66-238

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 04-02-26 A4
Power KW : 100.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Overflow quantity
min. L/h : 125
Tolerance L/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089
Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.10
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 13.00
Tolerance mm : + 0.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -10.30
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack
travel : 13.00
Difference ° CS : 2.40

CRT ZERO POSITION

Rack travel in mm : 13.40
Tolerance mm : + - 0.05

BASIC SETTING

Rated speed rpm : 1200

Del. quantity
cm³/1000 strokes : 261.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : -8.90
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 33.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 6.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

**(B) SETTING OF INJECTION PUMP
WITH GOVERNOR**

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1257
guide sleeve
travel mm : 9.18
Tolerance mm : + - 0.15

Rated speed rpm : 325
guide sleeve
travel mm : 1.52
Tolerance mm : + - 0.20

Rated speed rpm : 888
guide sleeve
travel mm : 6.57
Tolerance mm : + - 0.25

Rated speed rpm : 560
guide sleeve
travel mm : 4.01
Tolerance mm : + - 0.25

Rated speed rpm : 1650
guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1473

Rack travel in mm : 12.40
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1200
Aneroid pressure
hPa : 1200
Del. quantity
cm³/1000 strokes : 261.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 296.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1245

Tolerance 1/min : + 5
rack travel mm : -9.40
Rated speed rpm : 1405
Tolerance 1/min : + 15

rack travel mm : -12.90
Tolerance mm : + 0.50
Rated speed rpm : 1500

LOW IDLE

control lever
position degree : 251.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 225

CRT mm min. : > -7.40

Testing:

Rated speed rpm : 325
rack travel mm : -8.90
Tolerance mm : + 0.10

Rated speed rpm : 390

TORQUE CONTROL

Rated speed rpm : 1200

Rated speed rpm : 850
rack travel mm : -1.00
Tolerance mm : + 0.10

Rated speed rpm : 700
rack travel mm : -6.00
Tolerance mm : + 0.20

Rated speed rpm : 700
rack travel mm : -1.80
Tolerance mm : + 0.20

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1200
Pressure hPa : 1200

Rated speed rpm : 1200
Pressure hPa : -
rack travel mm : -3.20
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1200
Pressure hPa : 200
rack travel mm : -2.40
Tolerance mm : + 0.20

Pressure hPa : 440
rack travel mm : -1.10
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 130
Rated speed rpm : < 275

Check
speed 1/min : > 110
Check
speed 1/min : < 285

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 850
Del. quantity
cm³/1000 strokes : 249.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 153.0
Tolerance
cm³/1000 strokes : + 4.0
Check tolerance
cm³/1000S. : + 8.0

Aneroid pressure
hPa : -
Rated speed rpm : 1200
Del. quantity
cm³/1000 strokes : 183.0

Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 100.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : -8.90
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 33.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 995

Injection pump
Pump designation : PES6P120A320RS7343
EF type number : 0 412 726 915

Governor
Governer design. : RQV300...1000PA1160K
Governer no. : 0 421 815 420

Cust. part No. : CCEP 5144A 66-232

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 062356 A/41
Power KW : 280.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Test nozzle holder assembly : 1 688 901 105

Opening pressure bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.50
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 11.00
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

*NW after s.o.d. : -0.40
Tolerance : + 0.50

Check tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav. mm : 21.00
and maximum rack travel : 11.00
Difference ° CS : 2.25

CRT ZERO POSITION

Rack travel in mm : 12.80
Tolerance mm : + - 0.05

BASIC SETTING

Rated speed rpm : 1000

Del. quantity cm³/1000 strokes : 350.0

Tolerance cm³/1000 strokes : + - 1.0

Check tolerance cm³/1000S. : + - 4.0

Spred

Tolerance cm³/1000 strokes : 5.0

Check tolerance cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : -7.85
Tolerance mm : + - 0.10

Del. quantity cm³/1000 strokes : 36.0

Tolerance cm³/1000 strokes : + - 1.0

Check tolerance cm³/1000S. : + - 5.0

Spred

Tolerance cm³/1000 strokes : 8.0

Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1103
guide sleeve travel mm : 8.70
Tolerance mm : + - 0.25

Rated speed rpm : 300
guide sleeve travel mm : 1.32

Tolerance mm : + - 0.25

Rated speed rpm : 823
guide sleeve travel mm : 5.92
Tolerance mm : + - 0.25

Rated speed rpm : 405
guide sleeve travel mm : 2.43
Tolerance mm : + - 0.25

Rated speed rpm : 455
guide sleeve travel mm : 2.98
Tolerance mm : + - 0.25

Rated speed rpm : 550
guide sleeve travel mm : 3.66
Tolerance mm : + - 0.25

Rated speed rpm : 1440
guide sleeve travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
Rated speed rpm : 1300

Rack travel in mm : 11.60
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
Aneroid pressure hPa : 1200

Del. quantity cm³/1000 strokes : 350.0

Tolerance cm³/1000 strokes : + - 1.0

Check tolerance cm³/1000S. : + - 4.0

Spred

Tolerance cm³/1000 strokes : 5.0

Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 117.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1100
Tolerance 1/min : + - 5

rack travel mm : -8.80
Rated speed rpm : 1210
Tolerance 1/min : + - 15

rack travel mm : -12.30
Tolerance mm : + - 0.50
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 72.0
tolerance degree : + - 4.0

Testing:

Rated speed rpm : 300
rack travel mm : -7.85
Tolerance mm : + - 0.10

Rated speed rpm : 200

CRT mm max. : < -6.70

Rated speed rpm : 390

TORQUE CONTROL

Rated speed rpm : 1000

Rated speed rpm : 600
rack travel mm : -0.45
Tolerance mm : + - 0.15

Rated speed rpm : 800
rack travel mm : 0.10
Tolerance mm : + - 0.15

Rated speed rpm : 350
rack travel mm : -1.70
Tolerance mm : + - 0.30

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1000
Pressure hPa : 1200
Rated speed rpm : 1000
Pressure hPa : -
rack travel mm : -3.90
Tolerance mm : + - 0.30

MEASUREMENT

Rated speed rpm : 1000
Pressure hPa : 320
rack travel mm : -2.80
Tolerance mm : + - 0.15
Pressure hPa : 520
rack travel mm : -1.70
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 225

Check
speed 1/min : > 80
Check
speed 1/min : < 245

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 381.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 245.0

Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.25
Tolerance mm : + 0.75
Del. quantity
cm³/1000 strokes : 185.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : -7.85
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 36.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 5.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.97
Test oil : ISO 4113

Combination No. : 0 402 946 011

Injection pump
Pump designation : PES6P120A320RS8028
EP type number : 0 412 926 021

Governor
Governor design. : RQV275...1250PA1125K
Governor no. : 0 421 815 981

Cust. part No. : CCEP 5140A 66-205

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 06.02.26L51
Power KW : 132.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.00
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 11.00
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -0.25
Tolerance : + 0.50

Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack
travel : 10.00
Difference ° CS : 2.25

CRT ZERO POSITION

Rack travel in mm : 12.60
Tolerance mm : + - 0.05

BASIC SETTING

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : 170.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : -6.60
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 41.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1355
guide sleeve
travel mm : 10.10
Tolerance mm : + - 0.10

Rated speed rpm : 275
guide sleeve
travel mm : 1.00

Tolerance mm : + - 0.15

Rated speed rpm : 929
guide sleeve
travel mm : 6.80
Tolerance mm : + - 0.20

Rated speed rpm : 390
guide sleeve
travel mm : 2.39
Tolerance mm : + - 0.20

Rated speed rpm : 440
guide sleeve
travel mm : 3.01
Tolerance mm : + - 0.20

Rated speed rpm : 550
guide sleeve
travel mm : 3.92
Tolerance mm : + - 0.20

Rated speed rpm : 1650
guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1430

Rack travel in mm : 10.90
Tolerance mm : + - 2.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
Aneroid pressure
hPa : 1600

Del. quantity
cm³/1000 strokes : 170.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 296.0
tolerance degree : \pm 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1330
Tolerance 1/min : \pm 15

rack travel mm : -8.60
Rated speed rpm : 1470
Tolerance 1/min : \pm 5

rack travel mm : -12.10
Tolerance mm : \pm 0.55
Rated speed rpm : 1600

LOW IDLE

control lever
position degree : 244.0
tolerance degree : \pm 4.0

Testing:

Rated speed rpm : 325
rack travel mm : -6.60
Tolerance mm : \pm 0.10

Rated speed rpm : 200

CRT mm max. : < -5.20

Rated speed rpm : 360

TORQUE CONTROL
Rated speed rpm : 1250

Rated speed rpm : 650
rack travel mm : -1.10
Tolerance mm : \pm 0.10

Rated speed rpm : 350
rack travel mm : -1.70
Tolerance mm : \pm 0.25

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1250

E12

Pressure hPa : 1600
Tolerance mm : \pm 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : -4.30
Tolerance mm : \pm 0.20

MEASUREMENT

Rated speed rpm : 1250

Pressure hPa : 200
rack travel mm : -3.70
Tolerance mm : \pm 0.20

Pressure hPa : 360
rack travel mm : -2.60
Tolerance mm : \pm 0.05

Start interlock

Rated speed rpm : > 175
Rated speed rpm : < 240

Check
speed 1/min : > 155
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1600
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 182.0
Tolerance
cm³/1000 strokes : \pm 3.0
Check tolerance
cm³/1000S. : \pm 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 116.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 125.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : -6.60
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 41.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 6.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.05.90
Test oil : ISO 4113

Combination No. : 0 403 436 103

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137

Governor
Governor design. : RQV350...1100MW82
Governor no. : 0 420 083 130

Cust. part No. :

Customer-spec. information
Customer : CUMMINS/US
Motor : 6 CTA-830
Power KW : 186.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 017

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.10
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50
Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 8.00

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 12.75
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 151.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 3.0

Spred

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000s. : 6.0

Rated speed rpm : 350

Rack travel in mm : 7.25

Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 18.0

Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000s. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000s. : 5.5

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 350

guide sleeve

travel mm : + 1.40

Tolerance mm : + 0.20

Rated speed rpm : 1240

guide sleeve

travel mm : + 9.00

Tolerance mm : + 0.20

Rated speed rpm : 1140

guide sleeve

travel mm : + 7.90

Tolerance mm : + 0.10

Rated speed rpm : 700

guide sleeve

travel mm : + 4.10

Tolerance mm : + 0.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100
Aneroid pressure
hPa : 900
Del. quantity
cm³/1000 strokes : 151.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000s. : + 3.0
Spred
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000s. : 6.0

CONTROL LEVER

control lever
position degree : 48.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 11.70
Rated speed rpm : 1155
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1255
Tolerance 1/min : + 15

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 1330

LOW IDLE

control lever
position degree : 17.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 9.00

Testing:

Rated speed rpm : 350
rack travel mm : 7.25
Tolerance mm : + 0.05

Rated speed rpm : 430

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 12.75
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 13.65
Tolerance mm : + - 0.05

Rated speed rpm : 900
rack travel mm : 13.05
Tolerance mm : + - 0.15

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.00
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : 300
rack travel mm : 10.85
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 900
rack travel mm : 13.65
Tolerance mm : + - 0.05

Pressure hPa : 520
rack travel mm : 12.35
Tolerance mm : + - 0.15

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check speed 1/min : > 80
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 900
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 160.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 89.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + - 1.00
Del. quantity
cm³/1000 strokes : 215.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 13.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 7.25
Tolerance mm : + - 0.05
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 09.11.92
Test oil : ISO 4113

Combination No. : 0 403 436 105

Injection pump
Pump designation : PES6MW100/120RS1169
EP type number : 0 413 406 153

Governor
Governor design. : RQV350...1200MW78-1
Governor no. : 0 420 083 156

Cust. part No. :

Customer-spec. information

Customer : CDC
Motor : 6CTA830
Power KW : 197.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 017

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1200

Rack travel in mm : 11.95
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 142.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 350

Rack travel in mm : 5.70
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 18.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.0

Spred
Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 350
guide sleeve
travel mm : 1.40
Tolerance mm : + - 0.20

Rated speed rpm : 1350
guide sleeve
travel mm : 8.80
Tolerance mm : + - 0.20

Rated speed rpm : 1250
guide sleeve
travel mm : 7.70
Tolerance mm : + - 0.10

Rated speed rpm : 800
guide sleeve
travel mm : 5.20
Tolerance mm : + - 0.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1200
Aneroid pressure
hPa : 600
Del. quantity
cm³/1000 strokes : 142.0

Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0
Spred
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 6.0

CONTROL LEVER

control lever
position degree : 98.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 10.90
Rated speed rpm : 1245
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1400
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1500

LOW IDLE

control lever
position degree : 66.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 7.50

Testing:

Rated speed rpm : 350
rack travel mm : 5.70
Tolerance mm : + - 0.10

Rated speed rpm : 435

TORQUE CONTROL
Rated speed rpm : 1200
rack travel mm : 11.95
Tolerance mm : + - 0.05

Rated speed rpm : 750
rack travel mm : 11.95
Tolerance mm : + 0.05

Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 600
rack travel mm : 11.95
Tolerance mm : + 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.10
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 500
rack travel mm : 11.75
Tolerance mm : + 0.15

Pressure hPa : 345
rack travel mm : 10.45
Tolerance mm : + 0.05

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 102.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 3.0
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 6.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + 1.00
Del. quantity
cm³/1000 strokes : 223.0
Tolerance
cm³/1000 strokes : + 5.0
Check tolerance
cm³/1000S. : + 8.0

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check
speed 1/min : > 80
Check
speed 1/min : < 240

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.70
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 600
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 139.5
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.0
Spread

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 07.05.90
Test oil : ISO 4113

Combination No. : 0 403 436 106

Injection pump
Pump designation : FES6MW100/120RS1143
EP type number : 0 413 406 137

Governor
Governor design. : RQV350...1100MW78-2
Governor no. : 0 420 083 160

Cust. part No. : 3915907

Customer-spec. information

Customer : CUMMINS/US
Motor : 6 CTA-8.3
Power KW : 179.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 017

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.10
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 8.00

Barrel no. : 1

BASIC SETTING

Del. quantity
cm3/1000 strokes : 151.0

Tolerance
cm3/1000 strokes : + 1.0

Check tolerance
cm3/1000s. : + 3.0

Spread

Tolerance
cm3/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 350

Rack travel in mm : 7.40

Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 18.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.5

Spred
Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1100

guide sleeve
travel mm : 8.00

Tolerance mm : + - 0.10

Rated speed rpm : 350

guide sleeve
travel mm : 1.40

Tolerance mm : + - 0.20

Rated speed rpm : 550

guide sleeve
travel mm : 3.30

Tolerance mm : + - 0.30

Rated speed rpm : 1210

guide sleeve
travel mm : 9.20

Tolerance mm : + - 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure
hPa : 900

Del. quantity
cm³/1000 strokes : 151.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spred
Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

CONTROL LEVER

control lever
position degree : 100.0

tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 11.70

Rated speed rpm : 1145

Tolerance 1/min : + - 5

rack travel mm : 4.00

Rated speed rpm : 1245

Tolerance 1/min : + - 15

rack travel mm : 0.50

Tolerance mm : + - 0.50

Rated speed rpm : 1330

LOW IDLE

control lever
position degree : 69.0

tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 9.00

Testing:

Rated speed rpm : 350

rack travel mm : 7.40

Tolerance mm : + - 0.10

Rated speed rpm : 455

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500

Pressure hPa : 900
rack travel mm : 12.75
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 9.65
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 520
rack travel mm : 12.05
Tolerance mm : + - 0.15

Pressure hPa : 300
rack travel mm : 10.85
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check speed 1/min : > 80
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 77.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + - 1.00
Del. quantity
cm³/1000 strokes : 215.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 13.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 7.40
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.97
Test oil : ISO 4113

Combination No. : 0 403 444 155

Injection pump
Pump designation : PES4MW100/72CRS1235
EP type number : 0 413 404 121

Governor
Governor design. : RQV300...1300MW139
Governor no. : 0 420 083 304

Cust. part No. : 0260748502

Customer-spec. information

Customer : MB-NFZ
Motor : OM364A
Power KW : 79.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.70
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.00
Tolerance mm : + 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1300

Rack travel in mm : 12.90
Tolerance mm : + 0.05

Del. quantity cm³/1000 strokes : 88.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 3.0

Spread

Tolerance cm³/1000 strokes : 3.5

Check tolerance cm³/1000S. : 6.0

Rated speed rpm : 300

Rack travel in mm : 7.80
Tolerance mm : + - 0.10

Del. quantity cm³/1000 strokes : 12.0
Tolerance cm³/1000 strokes : + - 2.0
Check tolerance cm³/1000S. : + - 4.5

Spread
Tolerance cm³/1000 strokes : 3.5
Check tolerance cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1355
guide sleeve travel mm : 10.30
Tolerance mm : + - 0.15

Rated speed rpm : 300
guide sleeve travel mm : 1.25
Tolerance mm : + - 0.20

Rated speed rpm : 894
guide sleeve travel mm : 6.20
Tolerance mm : + - 0.25

Rated speed rpm : 510
guide sleeve travel mm : 3.55
Tolerance mm : + - 0.25

Rated speed rpm : 1600
guide sleeve travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever position degree : 117

Rated speed rpm : 1430

Rack travel in mm : 10.00
Tolerance mm : + - 2.70

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1300
Aneroid pressure hPa : 700
Del. quantity cm³/1000 strokes : 88.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 3.0
Spread
Tolerance cm³/1000 strokes : 3.5
Check tolerance cm³/1000S. : 6.0

CONTROL LEVER

control lever position degree : 113.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 11.90
Rated speed rpm : 1345
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1460
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1550

LOW IDLE

control lever position degree : 76.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 9.50

Testing:

Rated speed rpm : 300
rack travel mm : 7.80
Tolerance mm : + - 0.10

TORQUE CONTROL

Rated speed rpm : 1300
rack travel mm : 12.90
Tolerance mm : + - 0.05

Rated speed rpm : 600
rack travel mm : 13.40
Tolerance mm : + - 0.10

Rated speed rpm : 1150
rack travel mm : 13.10
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 700
rack travel mm : 12.90
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 230
rack travel mm : 0.90
Tolerance mm : + - 0.10

Pressure hPa : 150
rack travel mm : 0.40
Tolerance mm : + - 0.10

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 200

Check speed 1/min : > 80
Check speed 1/min : < 230

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 700
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 78.0
Tolerance
cm³/1000 strokes : + - 1.5
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 48.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 90.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 7.80
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread

Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 066 714

Injection pump
Pump designation : PES6P110A120RS3336
: -1
EP type number : 0 412 016 751

Governor
Governor design. : RSV440...900P2A687
Governor no. : 0 421 833 609

Cust. part No. : 3933640

Customer-spec. information

Customer : CDC
Motor : 6CTA
Power KW : 194.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015

Outside diameter : 6.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 8.00
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference
and maximum rack
travel : 15.00
Difference ° CS : 1.50

BASIC SETTINGRated speed rpm : 900

Rack travel in mm : 14.75

Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 201.5

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread
Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rated speed rpm : 440

Rack travel in mm : 5.10

Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 26.5Tolerance
cm³/1000 strokes : + - 2.0Check tolerance
cm³/1000S. : + - 4.5Spread
Tolerance
cm³/1000 strokes : 4.0Check tolerance
cm³/1000S. : 6.5

**(B) SETTING OF INJECTION PUMP
WITH GOVERNOR**

GUIDE SLEEVE POSITIONcontrol lever
position degree : - 3
Rated speed rpm : 800Rack travel in mm : 0.50
Tolerance mm : + - 0.20governor spring
pre-tension
click setting x : 3.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900

Aneroid pressure

hPa : 1500

Del. quantity
cm³/1000 strokes : 201.5Tolerance
cm³/1000 strokes : + - 1.0Check tolerance
cm³/1000S. : + - 3.0Spread
Tolerance
cm³/1000 strokes : 8.0Check tolerance
cm³/1000S. : 12.0

CONTROL LEVERcontrol lever
position degree : 88.0
tolerance degree : + - 6.0RATED SPEED
rack travel mm : 13.75
Rated speed rpm : 1010
Tolerance 1/min : + - 5rack travel mm : 4.00
Rated speed rpm : 1075
Tolerance 1/min : + - 5rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1130rack travel mm : 4.00
Rated speed rpm : 1090
Tolerance 1/min : + - 15

LOW IDLEcontrol lever
position degree : 71.0
tolerance degree : + - 6.0Control lever difference
Grad : 17.0

tolerance degree : + - 6.0
Setting point w/out bumper spring
Rated speed rpm : 440
rack travel mm : 4.60
Rated speed rpm : 100
CRT mm min. : > 19.00
Testing:
Rated speed rpm : 440
rack travel mm : 5.10
Tolerance mm : + - 0.10

TORQUE CONTROL
Rated speed rpm : 900
rack travel mm : 14.75
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 900
Pressure hPa : 1500
Rated speed rpm : 900
Pressure hPa : -
rack travel mm : 11.10
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 900
Pressure hPa : 995
rack travel mm : 13.45
Tolerance mm : + - 0.20
Pressure hPa : 655
rack travel mm : 12.05
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 900
Del. quantity
cm3/1000 strokes : 123.5

Tolerance
cm3/1000 strokes : + - 1.0
Check tolerance
cm3/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 21.00
Tolerance mm : + - 0.50
Del. quantity
cm3/1000 strokes : 154.0
Tolerance
cm3/1000 strokes : + - 20.0
Check tolerance
cm3/1000S. : + - 25.0

LOW IDLE

Rated speed rpm : 440
Rack travel in mm : 5.10
Tolerance mm : + - 0.10
Del. quantity
cm3/1000 strokes : 26.5
Tolerance
cm3/1000 strokes : + - 2.0
Check tolerance
cm3/1000S. : + - 4.5
Spred
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 6.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.07.97
Test oil : ISO 4113

Combination No. : 0 402 796 813

Injection pump
Pump designation : PES6P120A720RS7356
EP type number : 0 412 726 919

Governor
Governor design. : RE30
Governor no. : 0 421 890 017

Cust. part No. : RE 61658

Customer-spec. information

Customer : DEERE
Motor : 6081 HF001
Power KW : 205.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

Pump-specific values
in Section (B)
must be observed!

(A) INJECTION PUMP SETTINGS
No basic setting.
Setting of constant delivery
under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 9.75
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

(B) POSITIONER TESTING

Warm-up time: 3 minutes at
n=600 min⁻¹, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min⁻¹: 0

Setting point
(P, R and H pump)

Uact V : 3.100
CRT mm : 13.00
Tolerance mm : +/- 0.05
Check
tolerance mm : +/- 0.10

Check value
(P, R and H pump)

Uact V : 1.700
CRT mm : 6.15
Tolerance mm : +/- 0.25
Check
tolerance mm : +/- 0.30

Setting point
(M pump)

Uact V : 3.100
CRT mm : 12.50
Tolerance mm : +/- 0.05
Check
tolerance mm : +/- 0.10

Check value
(M pump)

Uact V : 1.700
CRT mm : 5.50
Tolerance mm : +/- 0.25
Check
tolerance mm : +/- 0.30

Stop position
(P, R and H pump)

Uact V : Value with
deenergised adjusting magnet
and control rod in
stop position.
CRT mm : 0.75
Tolerance mm : +/- 0.25
Check

tolerance mm : +/- 0.35

Stop position

(M pump)
Uact V : 0,720
Tolerance Volt : +/- 0,065
CRT mm : 1,00

Starting position
(M pump)

Uact V : 4,500
Tolerance Volt : +/- 0,115
CRT mm : 19,00
Tolerance mm : +/- 0,80

ENGINE-SPEED SENSOR
(All P and R pumps not
H and M pumps)

Test with control rod
in stop position

Engine speed min⁻¹: 60
Amplitude V : 1.4
Tolerance V : +/- 0.6
Check
tolerance V : +/- 1.20

Engine speed min⁻¹: 600
Difference
Amplitude to
Amplitude V : max.1.4

(C) INJECTION PUMP WITH POSITIONER**TEST POINT V1**

Rated speed rpm : 1050
Uact V : 3.030
Del. quantity
cm³/1000 strokes : 213.0
Tolerance
cm³/1000 strokes : +/- 1.0
Check tolerance
cm³/1000S. : +/- 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 700
Uact V : 3.120
Del. quantity
cm³/1000 strokes : 237.0

Tolerance
cm³/1000 strokes : +— 3.0
Check tolerance
cm³/1000S. : +— 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

TEST POINT L1

Rated speed rpm : 450
Uact V : 1.740
Tolerance Volt : +— 0.060
Check tolerance
Volt : +— 0.060
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : +— 3.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Uact V : 4.550
Del. quantity
cm³/1000 strokes : 120.0
Tolerance
cm³/1000 strokes : +— 20.0
Check tolerance
cm³/1000S. : +— 25.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 046 862

Injection pump
Pump designation : PES6P120A320RS3337
EP type number : 0 412 026 770

Governor
Governer design. : RQV300...1250PA1149K
Governer no. : 0 421 815 416

Cust. part No. : CCEP 5141A 66-218

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 06-02-26 V4
Power KW : 133.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 084

Inlet press. bar : 2.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.10
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

*NW after s.o.d. : -0.18
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack
travel : 10.50
Difference ° CS : 2.00

CRT ZERO POSITION

Rack travel in mm : 11.20
Tolerance mm : \pm 0.05

BASIC SETTING

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : 152.0

Tolerance
cm³/1000 strokes : \pm 1.0

Check tolerance
cm³/1000S. : \pm 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : -6.30
Tolerance mm : \pm 0.10

Del. quantity
cm³/1000 strokes : 34.0

Tolerance
cm³/1000 strokes : \pm 2.0

Check tolerance
cm³/1000S. : \pm 5.0

Spred
Tolerance

cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1346
guide sleeve
travel mm : 10.55
Tolerance mm : \pm 0.15

Rated speed rpm : 300
guide sleeve
travel mm : 1.31

Tolerance mm : \pm 0.20

Rated speed rpm : 905
guide sleeve
travel mm : 6.54
Tolerance mm : \pm 0.25

Rated speed rpm : 381
guide sleeve
travel mm : 2.38
Tolerance mm : \pm 0.25

Rated speed rpm : 431
guide sleeve
travel mm : 2.98
Tolerance mm : \pm 0.25

Rated speed rpm : 530
guide sleeve
travel mm : 3.77
Tolerance mm : \pm 0.25

Rated speed rpm : 1580
guide sleeve
travel mm : 13.50
Tolerance mm : \pm 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1380

Rack travel in mm : 10.50
Tolerance mm : \pm 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 152.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 4.0
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 297.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1325
Tolerance 1/min : + 15

rack travel mm : -7.20
Rated speed rpm : 1420
Tolerance 1/min : + 5

rack travel mm : -10.70
Tolerance mm : + 0.50
Rated speed rpm : 1550

LOW IDLE

control lever
position degree : 244.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : < -5.20

Testing:

Rated speed rpm : 300
rack travel mm : -6.30
Tolerance mm : + 0.10

Rated speed rpm : 400

TORQUE CONTROL
Rated speed rpm : 1250

Rated speed rpm : 850
rack travel mm : -1.35
Tolerance mm : + 0.15

Rated speed rpm : 350
rack travel mm : -1.60
Tolerance mm : + 0.20

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 1250
Pressure hPa : 1000

Rated speed rpm : 1250
Pressure hPa : -
rack travel mm : -1.90
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1250

Pressure hPa : 160
rack travel mm : -1.30
Tolerance mm : + 0.10

Pressure hPa : 280
rack travel mm : -0.25
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 175
Rated speed rpm : < 240

Check
speed 1/min : > 155
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 850
Del. quantity
cm³/1000 strokes : 124.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 113.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 108.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : -6.30
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 34.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 046 864

Injection pump
Pump designation : PES6P120A320RS3337
: -1
EP type number : 0 412 026 772

Governor
Governor design. : RQV300...1250PA1149
: -1K
Governor no. : 0 421 815 421

Cust. part No. : CCEP 5142B 66-219

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 06-02-26 W4
Power KW : 155.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 084

Inlet press. bar : 2.5

Overflow quantity min. l/h : 125
Tolerance l/h : + 20.0

Test nozzle holder assembly : 1 688 901 105

Opening pressure bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089
Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.15
Tolerance mm : + 0.05

Check tolerance mm : + 0.10

Rack travel in mm : 13.00
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -0.35
Tolerance : + 0.50

Check tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav. mm : 21.00
and maximum rack travel : 13.00

Difference • CS : 2.00

CRT ZERO POSITION

Rack travel in mm : 12.80
Tolerance mm : + - 0.05

BASIC SETTING

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : 194.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : -8.30
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 21.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 5.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1328
guide sleeve
travel mm : 9.98

Tolerance mm : + - 0.15

Rated speed rpm : 300
guide sleeve
travel mm : 1.31
Tolerance mm : + - 0.20

Rated speed rpm : 876
guide sleeve
travel mm : 6.02
Tolerance mm : + - 0.25

Rated speed rpm : 510
guide sleeve
travel mm : 3.59
Tolerance mm : + - 0.25

Rated speed rpm : 1600
guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1415

Rack travel in mm : 12.15
Tolerance mm : + - 2.03

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
Aneroid pressure

hPa : 1000
Del. quantity
cm³/1000 strokes : 194.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 296.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : -1.00
Rated speed rpm : 1317
Tolerance 1/min : + 15

rack travel mm : -8.80
Rated speed rpm : 1450
Tolerance 1/min : + 5

rack travel mm : -12.30
Tolerance mm : + 0.50
Rated speed rpm : 1550

LOW IDLE

control lever
position degree : 245.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : < -7.50

Testing:

Rated speed rpm : 300
rack travel mm : -8.30
Tolerance mm : + 0.10

Rated speed rpm : 400

TORQUE CONTROL
Rated speed rpm : 1250

Rated speed rpm : 850
rack travel mm : -1.75
Tolerance mm : + 0.05

Rated speed rpm : 350
rack travel mm : -1.50
Tolerance mm : + 0.30

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1000
Pressure hPa : 1000
rack travel mm : -1.40
Rated speed rpm : 1000

Pressure hPa : -
rack travel mm : -3.50
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1000

Pressure hPa : 160
rack travel mm : -3.10
Tolerance mm : + 0.15

Pressure hPa : 280
rack travel mm : -2.05
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 175
Rated speed rpm : < 240

Check
speed 1/min : > 155
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 850
Del. quantity
cm³/1000 strokes : 139.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 120.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 102.0

Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300

Rack travel in mm : -8.30
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 21.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 5.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 066 708

Injection pump
Pump designation : PES6P120A120RS3358
EP type number : 0 412 026 784

Governor
Governor design. : RSV475...1150P2A619
Governor no. : 0 421 833 522

Cust. part No. : 3283019

Customer-spec. information

Customer : CDC
Motor : 6BTA-590 ELITE
Power KW : 136.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 1.5

Overflow quantity
min. l/h : 100
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 6.75
Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1150

Rack travel in mm : 11.60
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 150.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 470

Rack travel in mm : 5.30
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 25.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.5

Spread

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + - 0.20

governor spring
pre-tension
click setting x : 4.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1150

Aneroid pressure

hPa : 1500

Del. quantity

cm³/1000 strokes : 150.0

Tolerance

cm³/1000 strokes : + - 1.0

Check tolerance

cm³/1000S. : + - 3.0

Spread

Tolerance

cm³/1000 strokes : 4.0

Check tolerance

cm³/1000S. : 7.5

CONTROL LEVER

control lever

position degree : 106.0

tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 10.60

Rated speed rpm : 1195

Tolerance 1/min : + - 5

rack travel mm : 4.00

Rated speed rpm : 1300

Tolerance 1/min : + - 15

rack travel mm : 0.85

Tolerance mm : + - 0.55

Rated speed rpm : 1400

rack travel mm : 4.00

Rated speed rpm : 1310

Tolerance 1/min : + - 15

LOW IDLE

control lever

position degree : 85.0

tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 470

rack travel mm : 4.80

Tolerance mm : + - 0.10

Testing:

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 470 |
| rack travel mm | : | 5.30 |
| Tolerance mm | : | + - 0.10 |
| | | |
| rack travel mm | : | 2.00 |
| Rated speed rpm | : | 610 |
| Tolerance 1/min | : | + - 30 |

TORQUE CONTROL

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 1150 |
| rack travel mm | : | 11.60 |
| Tolerance mm | : | + - 0.05 |
| | | |
| Rated speed rpm | : | 750 |
| rack travel mm | : | 11.65 |
| Tolerance mm | : | + - 0.10 |

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | 1500 |
| rack travel mm | : | 11.65 |
| Tolerance mm | : | + - 0.10 |
| | | |
| Rated speed rpm | : | 500 |
| Pressure hPa | : | - |
| rack travel mm | : | 8.50 |
| Tolerance mm | : | + - 0.20 |

MEASUREMENT

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | 900 |
| rack travel mm | : | 11.00 |
| Tolerance mm | : | + - 0.20 |
| | | |
| Pressure hPa | : | 560 |
| rack travel mm | : | 9.60 |
| Tolerance mm | : | + - 0.05 |

FUEL DELIVERY CHARACTERISTICS

| | | |
|-------------------------------|---|-------|
| Aneroid pressure | | |
| hPa | : | 1500 |
| Rated speed rpm | : | 750 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 167.0 |

| | | |
|-------------------------------|---|---------|
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 3.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 6.0 |
| Spred | | |
| Tolerance | | |
| cm ³ /1000 strokes | : | 12.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | 16.0 |

| | | |
|-------------------------------|---|---------|
| Aneroid pressure | | |
| hPa | : | - |
| Rated speed rpm | : | 500 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 90.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 1.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 4.0 |

STARTING FUEL DELIVERY

| | | |
|-------------------------------|---|----------|
| Rated speed rpm | : | 100 |
| rack travel mm | : | 20.25 |
| Tolerance mm | : | + - 0.75 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 165.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 20.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 25.0 |

LOW IDLE

| | | |
|-------------------------------|---|----------|
| Rated speed rpm | : | 470 |
| Rack travel in mm | : | 5.30 |
| Tolerance mm | : | + - 0.10 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 25.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 2.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 4.5 |
| Spred | | |
| Tolerance | | |
| cm ³ /1000 strokes | : | 6.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | 9.0 |

End of test specification sheet



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.09.97
Test oil : ISO 4113

Combination No. : 0 402 646 603

Injection pump
Pump designation : PE6P120A720RS7022
EP type number : 0 412 626 873

Governor
Governor design. : RQV200...1000PA539
: -15
Governor no. : 0 421 814 013

Cust. part No. : 1340658

Customer-spec. information

Customer : SCANIA
Motor : DS11 75

TEST BENCH REQUIREMENTS

Inlet Line : 4.2

Vibration
damper
(RoBo diaphragm) : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5

Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

 Rack travel in mm : 12.15
 Tolerance mm : + 0.05

 Del. quantity cm³/1000 strokes : 209.0

 Tolerance cm³/1000 strokes : + 1.0

 Check tolerance cm³/1000S. : + 4.0

 Spred

 Tolerance cm³/1000 strokes : 8.0

 Check tolerance cm³/1000S. : 12.0

Rated speed rpm : 250

 Rack travel in mm : 4.70
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 17.0
 Tolerance cm³/1000 strokes : + 2.0
 Check tolerance cm³/1000S. : + 5.0
 Spred
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1056
 guide sleeve
 travel mm : 8.57
 Tolerance mm : + 0.25

 Rated speed rpm : 250
 guide sleeve
 travel mm : 1.66
 Tolerance mm : + 0.25

 Rated speed rpm : 689

guide sleeve
 travel mm : 4.99
 Tolerance mm : + 0.25

 Rated speed rpm : 274
 guide sleeve
 travel mm : 1.92
 Tolerance mm : + 0.25

 Rated speed rpm : 324
 guide sleeve
 travel mm : 2.44
 Tolerance mm : + 0.25

 Rated speed rpm : 380
 guide sleeve
 travel mm : 2.85
 Tolerance mm : + 0.25

 Rated speed rpm : 1270
 guide sleeve
 travel mm : 11.50
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
 position degree : - 1
 Rated speed rpm : 1050

 Rack travel in mm : 16.50
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1500
 Del. quantity cm³/1000 strokes : 209.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spred
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

CONTROL LEVER

control lever
 position degree : 64.0
 tolerance degree : + 4.0

control lever
position degree : 116.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 11.10
Rated speed rpm : 1045
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1140
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 67.0
tolerance degree : + - 4.0

control lever
position degree : 23.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 150

CRT mm min. : > 6.20

Testing:

Rated speed rpm : 250
rack travel mm : 4.70
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 400
Tolerance 1/min : + - 30

TORQUE CONTROL
Rated speed rpm : 700
rack travel mm : 12.15
Tolerance mm : + - 0.05

Rated speed rpm : 1000
rack travel mm : 12.15
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 12.15
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.10
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 390
rack travel mm : 10.60
Tolerance mm : + - 0.15

Pressure hPa : 590
rack travel mm : 11.65
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 198.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000s. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 144.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000s. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 10.10
Tolerance mm : + 0.20
Del. quantity
cm³/1000 strokes : 160.0
Tolerance
cm³/1000 strokes : + 20.0
Check tolerance
cm³/1000S. : + 24.0

LOW IDLE

Rated speed rpm : 250
Rack travel in mm : 4.70
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 17.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 5.0
Spred
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 16.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 623

Injection pump
Pump designation : PE6P120A320RS7288
: -10
EP type number : 0 412 626 918

Governor
Governor design. : RQV250...900PA1069
: -1
Governor no. : 0 421 814 070

Cust. part No. : 866141 P04 v. 10/94

Customer-spec. information
Customer : PENTA
Motor : TAD 1030P

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Vibration
damper
(RoBo diaphragm) : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 077

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 300
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015
Outside diameter : 6.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.00
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 13.45

Tolerance mm : \pm 0.05

Del. quantity
cm³/1000 strokes : 290.0

Tolerance
cm³/1000 strokes : \pm 1.0

Check tolerance
cm³/1000S. : \pm 4.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

Rated speed rpm : 250

Rack travel in mm : 7.70

Tolerance mm : \pm 0.10

Del. quantity
cm³/1000 strokes : 18.0

Tolerance
cm³/1000 strokes : \pm 3.0

Check tolerance
cm³/1000S. : \pm 5.0

Spred

Tolerance
cm³/1000 strokes : 7.0

Check tolerance
cm³/1000S. : 11.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 949

guide sleeve

travel mm : 7.39

Tolerance mm : \pm 0.25

Rated speed rpm : 250

guide sleeve

travel mm : 1.12

Tolerance mm : \pm 0.25

Rated speed rpm : 657

guide sleeve

travel mm : 5.07

Tolerance mm : \pm 0.25

Rated speed rpm : 315

guide sleeve

travel mm : 1.98

Tolerance mm : \pm 0.25

Rated speed rpm : 365

guide sleeve

travel mm : 2.63

Tolerance mm : \pm 0.25

Rated speed rpm : 420

guide sleeve

travel mm : 3.17

Tolerance mm : \pm 0.25

Rated speed rpm : 1290

guide sleeve

travel mm : 11.50

Tolerance mm : \pm 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1

Rated speed rpm : 1150

Rack travel in mm : 9.00

Tolerance mm : \pm 3.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700

Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 290.0

Tolerance
cm³/1000 strokes : \pm 1.0

Check tolerance
cm³/1000S. : \pm 4.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 10.0

CONTROL LEVER

control lever
position degree : 64.0
tolerance degree : + - 4.0

control lever
position degree : 119.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 12.45
Rated speed rpm : 935
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1075
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1150

LOW IDLE

control lever
position degree : 74.0
tolerance degree : + - 4.0

control lever
position degree : 24.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 150

CRT mm min. : > 9.00

Testing:

Rated speed rpm : 250
rack travel mm : 7.70
Tolerance mm : + - 0.10

Rated speed rpm : 350

TORQUE CONTROL
Rated speed rpm : 700
rack travel mm : 13.45
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.45
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.00
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 200
rack travel mm : 10.30
Tolerance mm : + - 0.10

Pressure hPa : 1090
rack travel mm : 13.15
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 176.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

LOW IDLE

Rated speed rpm : 250
Rack travel in mm : 7.70
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + 5.0
Spred
Tolerance
cm³/1000 strokes : 7.0
Check tolerance
cm³/1000S. : 11.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.02.97
Test oil : ISO 4113

Combination No. : 0 402 646 640

Injection pump
Pump designation : PE6P120A320RS7311
: -10
EP type number : 0 412 626 932

Governor
Governor design. : RQV275...1150PA1110K
Governor no. : 0 421 815 375

Cust. part No. : 1280143/7

Customer-spec. information

Customer : DAF
Motor : RS 222 M
Power KW : 222.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0
x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1130

Rack travel in mm : 13.55
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 218.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : 3.80
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 16.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1203
guide sleeve
travel mm : 10.07

Tolerance mm : + - 0.25

Rated speed rpm : 275
guide sleeve
travel mm : 1.56

Tolerance mm : + - 0.25

Rated speed rpm : 814
guide sleeve
travel mm : 6.79

Tolerance mm : + - 0.25

Rated speed rpm : 300
guide sleeve
travel mm : 2.13

Tolerance mm : + - 0.25

Rated speed rpm : 350
guide sleeve
travel mm : 2.90
Tolerance mm : + - 0.25

Rated speed rpm : 460
guide sleeve
travel mm : 3.90
Tolerance mm : + - 0.25

Rated speed rpm : 1480
guide sleeve
travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1280

Rack travel in mm : 12.80
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1130
Aneroid pressure
hPa : -

Del. quantity
cm³/1000 strokes : 218.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 121.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 12.55
Rated speed rpm : 1192

Tolerance 1/min : + - 5

rack travel mm : 4.00

Rated speed rpm : 1315
 Tolerance 1/min : + 15

 rack travel mm : 0.70
 Tolerance mm : + 0.70
 Rated speed rpm : 1450

LOW IDLE

control lever
 position degree : 69.0
 tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm min. : > 6.00

Testing:

Rated speed rpm : 275
 rack travel mm : 3.80
 Tolerance mm : + 0.10

rack travel mm : 2.00
 Rated speed rpm : 330
 Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1130
 rack travel mm : 13.55
 Tolerance mm : + 0.05

Rated speed rpm : 850
 rack travel mm : 12.80
 Tolerance mm : + 0.05

Rated speed rpm : 775
 rack travel mm : 12.45
 Tolerance mm : + 0.10

Rated speed rpm : 650
 rack travel mm : 12.20
 Tolerance mm : + 0.10

Rated speed rpm : 500
 rack travel mm : 12.10
 Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1130
 Pressure hPa : 1500
 rack travel mm : 13.55
 Tolerance mm : + 0.05

Rated speed rpm : 1130
 Pressure hPa : -
 rack travel mm : 9.40
 Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 1130
 Pressure hPa : 580
 rack travel mm : 12.40
 Tolerance mm : + 0.05

Pressure hPa : 320
 rack travel mm : 10.60
 Tolerance mm : + 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
 hPa : -
 Rated speed rpm : 850
 Del. quantity
 cm³/1000 strokes : 224.0
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

Aneroid pressure
 hPa : -
 Rated speed rpm : 600
 Del. quantity
 cm³/1000 strokes : 146.5
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0

LOW IDLE

Rated speed rpm : 275

Rack travel in mm : 3.80

Tolerance mm : + 0.10

Del. quantity

cm³/1000 strokes : 16.0

Tolerance

cm³/1000 strokes : + 3.0

Check tolerance

cm³/1000S. : + 6.0

Speed

Tolerance

cm³/1000 strokes : 8.0

Check tolerance

cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 21.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 680

Injection pump
Pump designation : PE6P120A320RS7447
EP type number : 0 412 626 970

Governor
Governor design. : RQ275/1150PA1361
Governor no. : 0 421 801 825

Cust. part No. : 1329586

Customer-spec. information

Customer : DAF
Motor : GS 200-RQ
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 150
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 11.70
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check tolerance °NW : + 0.70

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.70
Tolerance mm : + 0.05

Del. quantity cm³/1000 strokes : 178.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0
 Rated speed rpm : 275
 Rack travel in mm : 5.25
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 32.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1205
 guide sleeve travel mm : 6.49
 Tolerance mm : + - 0.15
 Rated speed rpm : 275
 guide sleeve travel mm : 1.97
 Tolerance mm : + - 0.20
 Rated speed rpm : 1150
 guide sleeve travel mm : 6.00
 Tolerance mm : + - 0.10
 Rated speed rpm : 356

guide sleeve travel mm : 4.47
 Tolerance mm : + - 0.10

Rated speed rpm : 440
 guide sleeve travel mm : 6.00
 Tolerance mm : + - 0.10
 Rated speed rpm : 1360
 guide sleeve travel mm : 11.50
 Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600
 Rack travel in mm : 16.00
 Tolerance mm : + - 0.40

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 178.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever position degree : 99.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 10.70
 Rated speed rpm : 1202
 Tolerance 1/min : + - 8

rack travel mm : 4.00
 Rated speed rpm : 1280
 Tolerance 1/min : + - 15

rack travel mm : 0.70
 Tolerance mm : + - 0.70
 Rated speed rpm : 1450

LOW IDLE

control lever
position degree : 73.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm min. : > 6.40

Testing:

Rated speed rpm : 275
rack travel mm : 5.25
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 355
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 11.70
Tolerance mm : + 0.05

Rated speed rpm : 1150
rack travel mm : 11.70
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 600
Pressure hPa : 1000
rack travel mm : 11.70
Tolerance mm : + 0.05

Rated speed rpm : 600
Pressure hPa : -
rack travel mm : 6.70
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 600
Pressure hPa : 220
rack travel mm : 10.50

Tolerance mm : + 0.05
Pressure hPa : 100
rack travel mm : 8.10
Tolerance mm : + 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 101.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

LOW IDLE

Rated speed rpm : 275
Rack travel in mm : 5.25
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 32.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 22.10.97
Test oil : ISO 4113

Combination No. : 0 402 648 605

Injection pump
Pump designation : PE8P120A920/5RS7448
EP type number : 0 412 628 930

Governor
Governor design. : RQV300...1100PA1363
Governor no. : 0 421 814 203

Cust. part No. :

Customer-spec. information
Customer : KAMAZ
Motor : 740.51-320
Power KW : 235.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 230
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.10
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 19.50
Tolerance mm : + 1.50

Firing order : 1- 7- 5- 2- 4
: - 3- 8- 6

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 8.30
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 138.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 4.40

Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 27.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 6.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1153

guide sleeve
travel mm : 6.77

Tolerance mm : + 0.15

Rated speed rpm : 300

guide sleeve
travel mm : 0.93

Tolerance mm : + 0.20

Rated speed rpm : 574

guide sleeve
travel mm : 2.87

Tolerance mm : + 0.25

Rated speed rpm : 1540

guide sleeve
travel mm : 11.50

Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1

Rated speed rpm : 1435

Rack travel in mm : 7.30

Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure

hPa : 600

Del. quantity

cm³/1000 strokes : 138.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance

cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever

position degree : 59.0

tolerance degree : + 4.0

control lever

position degree : 106.0

tolerance degree : + 4.0

RATED SPEED

rack travel mm : 7.30

Rated speed rpm : 1147

Tolerance 1/min : + 5

Check
speed 1/min : + 10

rack travel mm : 4.00

Rated speed rpm : 1230

Tolerance 1/min : + 15

Check
speed 1/min : + 20

rack travel mm : 0.50

Tolerance mm : + 0.50

Rated speed rpm : 1340

LOW IDLE

control lever
position degree : 64.0
tolerance degree : + - 4.0

control lever
position degree : 7.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 5.30

Testing:

Rated speed rpm : 300
rack travel mm : 4.40
Tolerance mm : + - 0.10

Rated speed rpm : 275

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 8.30
Tolerance mm : + - 0.05

Rated speed rpm : 700
rack travel mm : 8.30
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 600
rack travel mm : 8.30
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.10
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 350
rack travel mm : 7.50
Tolerance mm : + - 0.20

Pressure hPa : 430
rack travel mm : 8.00

Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 600
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 133.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 89.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 270.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 4.40
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 17.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 603

Injection pump
Pump designation : PES6P120A320RS7359
EP type number : 0 412 726 925

Governor
Governor design. : RQ300/1050PA999-7
Governor no. : 0 421 801 799

Cust. part No. : CCEP 5153 66-224

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIHR062045 A41
Power KW : 188.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.70
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.25
Tolerance mm : + 0.75

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -0.50
Tolerance : + 0.50

Check
tolerance °NW : + 0.75

Barrel no. : 1

CRT ZERO POSITION

Rack travel in mm : 12.40
Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 600
 Tolerance mm : \pm 0.05
 Del. quantity cm³/1000 strokes : 197.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 4.0
 Spred
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

 Rated speed rpm : 275
 Rack travel in mm : -6.60
 Tolerance mm : \pm 0.10
 Del. quantity cm³/1000 strokes : 38.0
 Tolerance cm³/1000 strokes : \pm 2.0
 Check tolerance cm³/1000S. : \pm 5.0
 Spred
 Tolerance cm³/1000 strokes : 3.0
 Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1145
 guide sleeve
 travel mm : 6.55
 Tolerance mm : \pm 0.15
 Rated speed rpm : 275
 guide sleeve
 travel mm : 1.75
 Tolerance mm : \pm 0.20
 Rated speed rpm : 1050
 guide sleeve
 travel mm : 6.00
 Tolerance mm : \pm 0.10

Rated speed rpm : 594
 guide sleeve
 travel mm : 5.11
 Tolerance mm : \pm 0.10
 Rated speed rpm : 720
 guide sleeve
 travel mm : 6.00
 Tolerance mm : \pm 0.10
 Rated speed rpm : 1380
 guide sleeve
 travel mm : 11.50
 Tolerance mm : \pm 0.50

GUIDE SLEEVE POSITION

control lever
 position degree : 109
 Rated speed rpm : 800
 Rack travel in mm : 20.00
 Tolerance mm : \pm 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 600
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 197.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 4.0
 Spred
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 276.0
 tolerance degree : \pm 4.0

RATED SPEED
 rack travel mm : -1.00
 Rated speed rpm : 1120
 Tolerance 1/min : \pm 15
 rack travel mm : -8.40
 Rated speed rpm : 1250

Tolerance 1/min : + - 5
rack travel mm : -11.90
Tolerance mm : + - 0.50
Rated speed rpm : 1375

LOW IDLE

control lever
position degree : 254.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm min. : < -4.70

Testing:

Rated speed rpm : 275
rack travel mm : -6.60
Tolerance mm : + - 0.10

rack travel mm : -10.40
Rated speed rpm : 465
Tolerance 1/min : + - 20

TORQUE CONTROL

Rated speed rpm : 600
Tolerance mm : + - 0.05

Rated speed rpm : 1050
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1000

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : -1.75
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 220

rack travel mm : -0.85
Tolerance mm : + - 0.15
Pressure hPa : 160
rack travel mm : -1.25
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 195

Check
speed 1/min : > 80
Check
speed 1/min : < 215

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 1050
Del. quantity
cm³/1000 strokes : 198.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 153.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 150.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 275

Rack travel in mm : -6.60

Tolerance mm : + 0.10

Del. quantity

cm³/1000 strokes : 38.0

Tolerance

cm³/1000 strokes : + 2.0

Check tolerance

cm³/1000S. : + 5.0

Spred

Tolerance

cm³/1000 strokes : 8.0

Check tolerance

cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 17.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 995

Injection pump
Pump designation : PES6P120A320RS7343
EP type number : 0 412 726 915

Governor
Governor design. : RQV300...1000PA1160K
Governor no. : 0 421 815 420

Cust. part No. : CCEP 5144A 66-232

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 062356 A/41
Power KW : 280.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.50
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 11.00
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

*NW after s.o.d. : -0.40
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack
travel : 11.00
Difference ° CS : 2.25

CRT ZERO POSITION

Rack travel in mm : 12.80
Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 1000

Del. quantity cm³/1000 strokes : 350.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0

Spread

Tolerance cm³/1000 strokes : 5.0

Check tolerance cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : -7.60
Tolerance mm : + 0.10

Del. quantity cm³/1000 strokes : 38.0

Tolerance cm³/1000 strokes : + 1.5

Check tolerance cm³/1000S. : + 5.0

Spread

Tolerance cm³/1000 strokes : 8.0

Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1103
guide sleeve travel mm : 8.70
Tolerance mm : + 0.25

Rated speed rpm : 300
guide sleeve travel mm : 1.32

Tolerance mm : + - 0.25

Rated speed rpm : 823
guide sleeve travel mm : 5.92
Tolerance mm : + - 0.25

Rated speed rpm : 405
guide sleeve travel mm : 2.43
Tolerance mm : + - 0.25

Rated speed rpm : 455
guide sleeve travel mm : 2.98
Tolerance mm : + - 0.25

Rated speed rpm : 550
guide sleeve travel mm : 3.65
Tolerance mm : + - 0.25

Rated speed rpm : 1440
guide sleeve travel mm : 13.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
Rated speed rpm : 1300

Rack travel in mm : 11.60
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
Aneroid pressure hPa : 1200
Del. quantity cm³/1000 strokes : 350.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 4.0
Spread
Tolerance cm³/1000 strokes : 5.0
Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 117.0
tolerance degree : \pm 4.0

RATED SPEED
rack travel mm : -1.00
Rated speed rpm : 1100
Tolerance 1/min : \pm 5

rack travel mm : -8.80
Rated speed rpm : 1210
Tolerance 1/min : \pm 15

rack travel mm : -12.30
Tolerance mm : \pm 0.50
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 72.0
tolerance degree : \pm 4.0

Testing:

Rated speed rpm : 300
rack travel mm : -7.60
Tolerance mm : \pm 0.10

Rated speed rpm : 200

CRT mm max. : < -6.60

Rated speed rpm : 390

TORQUE CONTROL

Rated speed rpm : 1000

Rated speed rpm : 600
rack travel mm : -0.45
Tolerance mm : \pm 0.15

Rated speed rpm : 800
rack travel mm : 0.10
Tolerance mm : \pm 0.15

Rated speed rpm : 350
rack travel mm : -1.70
Tolerance mm : \pm 0.30

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1000
Pressure hPa : 1200

Rated speed rpm : 1000
Pressure hPa : -
rack travel mm : -3.90
Tolerance mm : \pm 0.30

MEASUREMENT

Rated speed rpm : 1000

Pressure hPa : 320
rack travel mm : -2.80
Tolerance mm : \pm 0.15

Pressure hPa : 520
rack travel mm : -1.70
Tolerance mm : \pm 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 225

Check speed 1/min : > 80
Check speed 1/min : < 245

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 381.0
Tolerance
cm³/1000 strokes : \pm 3.0
Check tolerance
cm³/1000S. : \pm 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 245.0

Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.25
Tolerance mm : + 0.75
Del. quantity
cm³/1000 strokes : 185.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : -7.60
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 38.0
Tolerance
cm³/1000 strokes : + 1.5
Check tolerance
cm³/1000S. : + 5.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 16.10.97
Test oil : ISO 4113

Combination No. : 0 402 846 063

Injection pump
Pump designation : PE6P120A320RS8024-1
EP type number : 0 412 826 029

Governor
Governor design. : RQV250...1100PA1072
: -5K
Governor no. : 0 421 815 977

Cust. part No. : 477952-P05 v. 11.95

Customer-spec. information
Customer : VOLVO-TRUCK
Motor : TD74 EU
Power KW : 210.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 089

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 7.60
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check
tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 13.60
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 211.0

Tolerance
 cm³/1000 strokes : +
 Check tolerance
 cm³/1000S. : +
 Spred
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 11.0

Rated speed rpm : 300
 Rack travel in mm : 4.80
 Tolerance mm : +
 Del. quantity
 cm³/1000 strokes : 23.0
 Tolerance
 cm³/1000 strokes : +
 Check tolerance
 cm³/1000S. : +
 Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1176
 guide sleeve
 travel mm : 10.15
 Tolerance mm : +
 Rated speed rpm : 250
 guide sleeve
 travel mm : 1.33
 Tolerance mm : +
 Rated speed rpm : 733
 guide sleeve
 travel mm : 5.39
 Tolerance mm : +
 Rated speed rpm : 307
 guide sleeve
 travel mm : 2.29
 Tolerance mm : +
 Rated speed rpm : 357

guide sleeve
 travel mm : 2.97
 Tolerance mm : +
 Rated speed rpm : 390
 guide sleeve
 travel mm : 3.22
 Tolerance mm : +
 Rated speed rpm : 1390
 guide sleeve
 travel mm : 13.50
 Tolerance mm : +
 0.50

GUIDE SLEEVE POSITION

control lever
 position degree : -
 Rated speed rpm : 1290
 Rack travel in mm : 7.50
 Tolerance mm : +
 2.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100
 Aneroid pressure
 hPa : 1500
 Del. quantity
 cm³/1000 strokes : 211.0
 Tolerance
 cm³/1000 strokes : +
 1.0
 Check tolerance
 cm³/1000S. : +
 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 11.0

CONTROL LEVER

control lever
 position degree : 68.0
 tolerance degree : +
 4.0
 control lever
 position degree : 120.0
 tolerance degree : +
 4.0

RATED SPEED
 rack travel mm : 12.60
 Rated speed rpm : 1135
 Tolerance 1/min : +
 5

rack travel mm : 4.00
 Rated speed rpm : 1230
 Tolerance 1/min : + - 15

 rack travel mm : 0.50
 Tolerance mm : + - 0.50
 Rated speed rpm : 1320

LOW IDLE

control lever
 position degree : 72.0
 tolerance degree : + - 4.0

 control lever
 position degree : 20.0
 tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

 CRT mm min. : > 6.70

 Testing:

 Rated speed rpm : 300
 rack travel mm : 4.80
 Tolerance mm : + - 0.10

 Rated speed rpm : 375

TORQUE CONTROL

Rated speed rpm : 1100
 rack travel mm : 13.60
 Tolerance mm : + - 0.05

 Rated speed rpm : 650
 rack travel mm : 13.10
 Tolerance mm : + - 0.10

 Rated speed rpm : 300
 rack travel mm : 11.50
 Tolerance mm : + - 0.30

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1100
 Pressure hPa : 1500
 rack travel mm : 13.60

G20

Tolerance mm : + - 0.10

 Rated speed rpm : 1100
 Pressure hPa : -
 rack travel mm : 7.75
 Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 1100

 Pressure hPa : 885
 rack travel mm : 5.10
 Tolerance mm : + - 0.20

 Pressure hPa : 190
 rack travel mm : 0.25
 Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
 hPa : 1500
 Rated speed rpm : 650
 Del. quantity
 cm³/1000 strokes : 248.0
 Tolerance
 cm³/1000 strokes : + - 2.5
 Check tolerance
 cm³/1000S. : + - 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 10.0
 Check tolerance
 cm³/1000S. : 14.0

Aneroid pressure
 hPa : -
 Rated speed rpm : 650
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : + - 1.0
 Check tolerance
 cm³/1000S. : + - 4.0

LOW IDLE

Rated speed rpm : 300
 Rack travel in mm : 4.80

Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : + - 2.5
Check tolerance
cm³/1000S. : + - 5.0
Speed
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 21.10.97
Test oil : ISO 4113

Combination No. : 0 402 946 019

Injection pump
Pump designation : PES6P120A720RS8041
EP type number : 0 412 926 027

Governor
Governor design. : RQV250...950PA1253
: -1
Governor no. : 0 421 814 167

Cust. part No. : 1383216

Customer-spec. information

Customer : SCANIA
Motor : DSC 11.74

TEST BENCH REQUIREMENTS

Inlet Line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 110
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.40
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 10.35
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 227.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 7.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 14.0

Rated speed rpm : 250

Rack travel in mm : 5.60
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 16.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP
WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1005
guide sleeve
travel mm : 7.25
Tolerance mm : + - 0.15

Rated speed rpm : 250
guide sleeve
travel mm : 1.31
Tolerance mm : + - 0.20

Rated speed rpm : 673
guide sleeve
travel mm : 4.96
Tolerance mm : + - 0.25

Rated speed rpm : 420
guide sleeve
travel mm : 3.37
Tolerance mm : + - 0.25

Rated speed rpm : 1390
guide sleeve
travel mm : 11.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1250

Rack travel in mm : 9.35
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 227.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 7.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 14.0

CONTROL LEVER

control lever
position degree : 58.0
tolerance degree : + - 4.0

control lever
position degree : 111.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 9.35
Rated speed rpm : 995

Tolerance 1/min : + - 5
Check
speed 1/min : + - 10

rack travel mm : 4.00

Rated speed rpm : 1115
Tolerance 1/min : + - 15
Check
speed 1/min : + - 20

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 66.0
tolerance degree : + - 4.0

control lever
position degree : 12.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 150

CRT mm min. : > 7.00

Testing:

Rated speed rpm : 250
rack travel mm : 5.60
Tolerance mm : + - 0.10

Rated speed rpm : 300

TORQUE CONTROL

Rated speed rpm : 700
rack travel mm : 10.35
Tolerance mm : + - 0.05

Rated speed rpm : 950
rack travel mm : 10.35
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 10.35
Tolerance mm : + - 0.05

Rated speed rpm : 500

Pressure hPa : -
rack travel mm : 8.20
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 260
rack travel mm : 8.80
Tolerance mm : + - 0.15

Pressure hPa : 430
rack travel mm : 9.80
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 170

Check
speed 1/min : > 80
Check
speed 1/min : < 190

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 950
Del. quantity
cm³/1000 strokes : 216.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 153.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50

Del. quantity
cm³/1000 strokes : 180.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 24.0

LOW IDLE

Rated speed rpm : 250

Rack travel in mm : 5.60
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 16.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spred
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 946 023

Injection pump
Pump designation : PES6P120A320RS8038
EP type number : 0 412 926 025

Governor
Governor design. : RQ250/1000PA1265-2
Governor no. : 0 421 801 808

Cust. part No. : 1385102

Customer-spec. information
Customer : SCANIA
Motor : DSC 9.15

TEST BENCH REQUIREMENTS

Inlet line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 110
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.00
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.20

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 0.30
Check tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 600

Rack travel in mm : 12.90
 Tolerance mm : \pm 0.05
 Del. quantity cm³/1000 strokes : 300.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 9.0
 Spread
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

Rated speed rpm : 250
 Rack travel in mm : 7.60
 Tolerance mm : \pm 0.10
 Del. quantity cm³/1000 strokes : 40.0
 Tolerance cm³/1000 strokes : \pm 3.0
 Check tolerance cm³/1000S. : \pm 6.0
 Spread
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1060
 guide sleeve
 travel mm : 4.82
 Tolerance mm : \pm 0.15

Rated speed rpm : 250
 guide sleeve
 travel mm : 1.44
 Tolerance mm : \pm 0.20

Rated speed rpm : 970
 guide sleeve
 travel mm : 4.50
 Tolerance mm : \pm 0.10

Rated speed rpm : 360
 guide sleeve
 travel mm : 3.50
 Tolerance mm : \pm 0.10
 Rated speed rpm : 490
 guide sleeve
 travel mm : 4.50
 Tolerance mm : \pm 0.10
 Rated speed rpm : 1134
 guide sleeve
 travel mm : 5.50
 Tolerance mm : \pm 0.10
 Rated speed rpm : 1600
 guide sleeve
 travel mm : 11.50
 Tolerance mm : \pm 0.50

GUIDE SLEEVE POSITION

control lever
 position degree : 109
 Rated speed rpm : 600
 Rack travel in mm : 16.40
 Tolerance mm : \pm 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 600
 Aneroid pressure hPa : 1500
 Del. quantity cm³/1000 strokes : 300.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 9.0
 Spread
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

CONTROL LEVER

control lever
 position degree : 47.0
 tolerance degree : \pm 4.0
 control lever
 position degree : 108.0

tolerance degree : + 4.0

RATED SPEED

rack travel mm : 11.90

Rated speed rpm : 1045

Tolerance 1/min : + 5

Check

speed 1/min : + 10

rack travel mm : 4.00

Rated speed rpm : 1240

Tolerance 1/min : + 15

Check

speed 1/min : + 20

rack travel mm : 0.50

Tolerance mm : + 0.50

Rated speed rpm : 1350

LOW IDLE

control lever

position degree : 87.0

tolerance degree : + 4.0

control lever

position degree : 25.0

tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 150

CRT mm min. : > 9.50

Testing:

Rated speed rpm : 250

rack travel mm : 7.60

Tolerance mm : + 0.10

rack travel mm : 2.00

Rated speed rpm : 355

Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 600

rack travel mm : 12.90

Tolerance mm : + 0.05

Rated speed rpm : 1000

rack travel mm : 12.90

Tolerance mm : + 0.10

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500

Pressure hPa : 1500

rack travel mm : 12.90

Tolerance mm : + 0.05

Rated speed rpm : 500

Pressure hPa : -

rack travel mm : 9.80

Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 325

rack travel mm : 10.55

Tolerance mm : + 0.15

Pressure hPa : 760

rack travel mm : 12.15

Tolerance mm : + 0.05

Start interlock

Rated speed rpm : < 190

Rated speed rpm : > 150

Check

speed 1/min : < 210

Check

speed 1/min : > 130

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : 1500

Rated speed rpm : 1000

Del. quantity

cm³/1000 strokes : 295.0

Tolerance

cm³/1000 strokes : + 4.0

Check tolerance

cm³/1000S. : + 9.0

Aneroid pressure

hPa : -

Rated speed rpm : 500

Del. quantity
cm³/1000 strokes : 172.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 6.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 265.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 24.0

LOW IDLE

Rated speed rpm : 250
Rack travel in mm : 7.60
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spred
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 20.10.97
Test oil : ISO 4113

Combination No. : 0 402 946 030A

Injection pump
Pump designation : PES6P120A720RS8C49
EP type number : 0 412 926 031

Governor
Governor design. : RQ750PA1299
Governor no. : 0 421 801 810

Cust. part No. : 1397783 Variante A

Customer-spec. information

Customer : SCANIA
Motor : DSC1158A

TEST BENCH REQUIREMENTS

Inlet Line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 3.65
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 14.50
Tolerance mm : + - 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + - 0.30
Check
tolerance °NW : + - 0.75

Start of delivery blocking

Tolerance : + - 0.10
Check
tolerance °NW : + - 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 850

Rack travel in mm : 13.15
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 338.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rack travel in mm : 3.00
Tolerance mm : + - 0.20

Del. quantity
cm³/1000 strokes : 30.0

Tolerance
cm³/1000 strokes : + - 4.0

Check tolerance
cm³/1000S. : + - 6.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 758
guide sleeve
travel mm : 4.98
Tolerance mm : + - 0.15

Rated speed rpm : 480
guide sleeve
travel mm : -10.85
Tolerance mm : + - 0.25

Rated speed rpm : 840
guide sleeve
travel mm : 18.50
Tolerance mm : + - 0.25

Rated speed rpm : 795
guide sleeve
travel mm : 10.00
Tolerance mm : + - 0.25

Rated speed rpm : 850
guide sleeve
travel mm : 11.50
Tolerance mm : + - 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 850
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 338.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 28.0
tolerance degree : + - 4.0
control lever
position degree : 89.0
tolerance degree : + - 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 902
Tolerance 1/min : + - 2
rack travel mm : 12.10

Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1000

rack travel mm : 12.10

rack travel mm : 4.00

rack travel mm : 0.50

Tolerance mm : + 0.50

Rated speed rpm : 752
rack travel mm : 12.10

Rated speed rpm : 780
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 753
rack travel mm : 12.10

Rated speed rpm : 781
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 754
rack travel mm : 12.10

Rated speed rpm : 782
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 755
rack travel mm : 12.10

Rated speed rpm : 783
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

TORQUE CONTROL

Rated speed rpm : 850
rack travel mm : 13.15
Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.15
Tolerance mm : + 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.80
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 230
rack travel mm : 8.45
Tolerance mm : + 0.25

Pressure hPa : 580
rack travel mm : 10.45
Tolerance mm : + 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : -
Rated speed rpm : 500
Del. quantity cm³/1000 strokes : 230.0
Tolerance cm³/1000 strokes : + 1.0
Check tolerance cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Tolerance mm : + 0.20

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 9 400 087 438

Injection pump
Pump designation : PE6P110A320RS3108X
EP type number : 0 411 816 730

Governor
Governor design. : RQV250...1100PA589
: -3
Governor no. : 9 420 080 288

Cust. part No. :

Customer-spec. information
Customer : VOLVO-TRUCK
Motor : THD100 ED
Power KW : 203.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 12.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 166.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 4.0

Spread

Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

Rated speed rpm : 250
 Rack travel in mm : 5.10
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 32.0
 Tolerance
 cm³/1000 strokes : + 2.5
 Check tolerance
 cm³/1000S. : + 5.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.5
 Check tolerance
 cm³/1000S. : 7.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 950
 guide sleeve
 travel mm : 6.50
 Tolerance mm : + 0.20
 Rated speed rpm : 250
 guide sleeve
 travel mm : 1.20
 Tolerance mm : + 0.10
 Rated speed rpm : 500
 guide sleeve
 travel mm : 4.50
 Tolerance mm : + 0.40
 Rated speed rpm : 700
 guide sleeve
 travel mm : 6.50
 Tolerance mm : + 0.20
 Rated speed rpm : 1100
 guide sleeve
 travel mm : 7.25
 Tolerance mm : + 0.25

GUIDE SLEEVE POSITION

control lever
 position degree : - 1
 Rated speed rpm : 1175
 Rack travel in mm : 16.50
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
 Aneroid pressure
 hPa : 900
 Del. quantity
 cm³/1000 strokes : 166.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

CONTROL LEVER

control lever
 position degree : 65.0
 tolerance degree : + 4.0

control lever
 position degree : 119.0
 tolerance degree : + 4.0

RATED SPEED
 rack travel mm : 11.10
 Rated speed rpm : 1165
 Tolerance 1/min : + 5

rack travel mm : 4.00
 Rated speed rpm : 1240
 Tolerance 1/min : + 15

rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1350

LOW IDLE

control lever
 position degree : 64.0
 tolerance degree : + 4.0

control lever
position degree : 12.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 6.70

Testing:

Rated speed rpm : 250
rack travel mm : 5.10
Tolerance mm : + - 0.10

Rated speed rpm : 338

TORQUE CONTROL

Rated speed rpm : 700
rack travel mm : 12.15
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 900
rack travel mm : 12.15
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 700
rack travel mm : 2.50
Tolerance mm : + - 0.10

Pressure hPa : 280
rack travel mm : 0.25
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 700

Del. quantity
cm³/1000 strokes : 113.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 170.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 250
Rack travel in mm : 5.10
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 32.0
Tolerance
cm³/1000 strokes : + - 2.5
Check tolerance
cm³/1000S. : + - 5.0
Spread
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 7.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 0 400 074 870

Injection pump
Pump designation : PES4M55C320RS193
EP type number : 0 410 054 931

Governor
Governor design. : RSF400/2000M91
Governor no. : 0 420 021 296

Cust. part No. :

Customer-spec. information
Customer : SSANGYONG
Motor : OM661 D23 LA
Power KW : 73.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 1.75
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 21.00
Tolerance mm : + 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 16.50
Tolerance : + 0.20
Check tolerance *NW : + 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 14.60
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 56.1

Tolerance
cm³/1000 strokes : + 0.5

Check tolerance
cm³/1000s. : + 1.5

Spread
Tolerance
cm³/1000 strokes : 2.5

Check tolerance
cm³/1000S. : 3.0

Rated speed rpm : 400

Rack travel in mm : 5.40

Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 6.7

Tolerance
cm³/1000 strokes : + - 0.5

Spred

Tolerance
cm³/1000 strokes : 1.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

IDLE STAGE

Rack travel in mm : 5.50
Tolerance mm : + - 0.10

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Ref. pressure

ALDA / ADA hPa : 1700

Del. quantity

cm³/1000 strokes : 56.1

Tolerance

cm³/1000 strokes : + - 0.5

Check tolerance

cm³/1000S. : + - 1.5

Spred

Tolerance
cm³/1000 strokes : 2.5

Check tolerance
cm³/1000S. : 3.0

RATED SPEED

control lever
position degree : 50.0

Rated speed rpm : 2300

rack travel mm : 8.00

Tolerance mm : + - 0.20

Rated speed rpm : 2600

rack travel mm : 0.50

Tolerance mm : + - 0.60

SET IDLE CONTROL LEVER POSITION

Rated speed rpm : 1000

CRT mm max. : 1.95

LOW IDLE

control lever
position degree : 8.0
tolerance degree : + - 2.0

Setting point w/out bumper spring

Rated speed rpm : 400

rack travel mm : 5.40

SET IDLE AUXILIARY SPRING

Rated speed rpm : 500
rack travel mm : 3.90
Tolerance mm : + - 0.10

Load pick-up

Rated speed rpm : 200
rack travel mm : 12.70

Rated speed rpm : 1000

CRT mm max. : 1.95

rack travel mm : 5.40
Rated speed rpm : 400

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 14.60
Tolerance mm : + - 0.05

Rated speed rpm : 1700
rack travel mm : 13.85
Tolerance mm : + - 0.10

Rated speed rpm : 2000
rack travel mm : 13.30
Tolerance mm : + - 0.10

Rated speed rpm : 1000
rack travel mm : 12.00
Tolerance mm : + - 0.10

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm : 1000
 Ref. pressure
 ALDA / ADA hPa : 1500
 rack travel mm : -0.40
 Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 1000
 Ref. pressure
 ALDA / ADA hPa : 1100
 rack travel mm : -2.60
 Tolerance mm : + - 0.10

Ref. pressure
 ALDA / ADA hPa : 750
 rack travel mm : -4.40
 Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Ref. pressure
 ALDA / ADA hPa : 1700
 Rated speed rpm : 1700
 Del. quantity
 cm³/1000 strokes : 54.6
 Tolerance
 cm³/1000 strokes : + - 0.8
 Check tolerance
 cm³/1000S. : + - 1.8
 Spread
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.0

Ref. pressure
 ALDA / ADA hPa : 1700
 Rated speed rpm : 2000
 Spread
 Del. quantity
 cm³/1000 strokes : 52.9
 Tolerance
 cm³/1000 strokes : + - 1.0
 Check tolerance
 cm³/1000S. : + - 2.0
 Spread
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.0

Ref. pressure
 ALDA / ADA hPa : 1100
 Rated speed rpm : 1000

Del. quantity
 cm³/1000 strokes : 43.5
 Tolerance
 cm³/1000 strokes : + - 0.5
 Check tolerance
 cm³/1000S. : + - 1.5
 Spread
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.0

Ref. pressure
 ALDA / ADA hPa : 1100
 Rated speed rpm : 1000
 Del. quantity
 cm³/1000 strokes : 43.5
 Tolerance
 cm³/1000 strokes : + - 0.5
 Check tolerance
 cm³/1000S. : + - 1.5
 Spread
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.0

HIGH IDLE

Ref. pressure
 ALDA / ADA hPa : 1700
 Rated speed rpm : 2300
 rack travel mm : 8.00
 Tolerance mm : + - 0.20
 Del. quantity
 cm³/1000 strokes : 28.4
 Tolerance
 cm³/1000 strokes : + - 2.0
 Check tolerance
 cm³/1000S. : + - 3.0
 Spread
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : 21.60
 Tolerance mm : + - 1.50
 Del. quantity
 cm³/1000 strokes : 58.3
 Tolerance
 cm³/1000 strokes : + - 4.0
 Check tolerance
 cm³/1000S. : + - 5.0

Spred
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 6.0

End of test specification sheet

LOW IDLE

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 7.7
Check tolerance
cm³/1000S. : + 2.3
Spred
Check tolerance
cm³/1000S. : 1.5

control lever
position degree : > 42.00

control lever
position degree : < 39.50

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever
position degree : 8.0
tolerance degree : + 2.0

Rated speed rpm : 450

Rack travel in mm : 7.80
Tolerance mm : + 0.80
Del. quantity
cm³/1000 strokes : 17.2
Tolerance
cm³/1000 strokes : + 3.5
Check tolerance
cm³/1000S. : + 4.5
Vacuum hPa : 450.0

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 400
Vacuum hPa : -450.0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 19.08.97
Test oil : ISO 4113

Combination No. : 0 400 074 872

Injection pump
Pump designation : PES4M55C320RS192
EP type number : 0 410 054 932

Governor
Governor design. : RSF360/1900M90
Governor no. : 0 420 021 295

Cust. part No. :

Customer-spec. information
Customer : MB-PKW
Motor : OM601 D23 LA
Power KW : 72.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 1.75
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 21.00
Tolerance mm : + - 1.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

°NW after s.o.d. : 16.50
Tolerance : + - 0.20
Check
tolerance °NW : + - 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 14.65
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 64.1

Tolerance
cm³/1000 strokes : + - 0.5

Check tolerance
cm³/1000s. : + - 1.5

Spread

Tolerance : +
 cm³/1000 strokes : 2.5
 Check tolerance : 3.0
 Rated speed rpm : 360
 Rack travel in mm : 5.30
 Tolerance mm : +
 Del. quantity : 0.10
 cm³/1000 strokes : 6.5
 Tolerance : +
 cm³/1000 strokes : 0.5
 Spread
 Tolerance : +
 cm³/1000 strokes : 1.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

IDLE STAGE

Rack travel in mm : 5.00
 Tolerance mm : +
 0.10

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Ref. pressure
 ALDA / ADA hPa : 1900
 Del. quantity
 cm³/1000 strokes : 64.1
 Tolerance : +
 cm³/1000 strokes : 0.5
 Check tolerance : +
 cm³/1000S. : 1.5
 Spread
 Tolerance : +
 cm³/1000 strokes : 2.5
 Check tolerance : +
 cm³/1000S. : 3.0

RATED SPEED

control lever position degree : 50.0
 Rated speed rpm : 2200
 rack travel mm : 9.35
 Tolerance mm : +
 0.20
 Rated speed rpm : 2700
 rack travel mm : 0.50

Tolerance mm : +
 0.50

SET IDLE CONTROL LEVER POSITION

Rated speed rpm : 900
 CRT mm max. : 1.85

LOW IDLE

control lever position degree : 8.0
 tolerance degree : +
 2.0

Setting point w/out bumper spring
 Rated speed rpm : 360
 rack travel mm : 5.30

SET IDLE AUXILIARY SPRING

Rated speed rpm : 500
 rack travel mm : 3.50
 Tolerance mm : +
 0.10

Load pick-up

Rated speed rpm : 150
 rack travel mm : >
 11.00

Rated speed rpm : 900
 CRT mm max. : 1.85
 rack travel mm : 5.30
 Rated speed rpm : 360

TORQUE CONTROL

Rated speed rpm : 900
 rack travel mm : 14.65
 Tolerance mm : +
 0.05

Rated speed rpm : 1500
 rack travel mm : 13.80
 Tolerance mm : +
 0.10

Rated speed rpm : 1900
 rack travel mm : 13.30
 Tolerance mm : +
 0.15

Rated speed rpm : 500
 rack travel mm : 16.20
 Tolerance mm : +
 0.30

Rated speed rpm : 900

rack travel mm : 10.95
Tolerance mm : + - 0.10

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm : 900
Ref. pressure ALDA / ADA hPa : 1650
rack travel mm : -0.50
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 900
Ref. pressure ALDA / ADA hPa : 1100
rack travel mm : -3.70
Tolerance mm : + - 0.10

Ref. pressure ALDA / ADA hPa : 750
rack travel mm : -5.45
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Ref. pressure ALDA / ADA hPa : 1900
Rated speed rpm : 1500
Del. quantity cm3/1000 strokes : 61.1
Tolerance cm3/1000 strokes : + - 0.8
Check tolerance cm3/1000S. : + - 1.8
Spread
Tolerance cm3/1000 strokes : 2.5
Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1900
Rated speed rpm : 1900
Spread
Del. quantity cm3/1000 strokes : 58.6
Tolerance cm3/1000 strokes : + - 1.0
Check tolerance cm3/1000S. : + - 2.0
Spread
Tolerance cm3/1000 strokes : 2.5

Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1100
Rated speed rpm : 900
Del. quantity cm3/1000 strokes : 43.5
Tolerance cm3/1000 strokes : + - 0.5
Check tolerance cm3/1000S. : + - 1.5
Spread
Tolerance cm3/1000 strokes : 2.5
Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1900
Rated speed rpm : 500
Del. quantity cm3/1000 strokes : 67.1
Tolerance cm3/1000 strokes : + - 2.0
Check tolerance cm3/1000S. : + - 3.0

Ref. pressure ALDA / ADA hPa : 1100
Rated speed rpm : 900
Del. quantity cm3/1000 strokes : 43.5
Tolerance cm3/1000 strokes : + - 0.5
Check tolerance cm3/1000S. : + - 1.5
Spread
Tolerance cm3/1000 strokes : 2.5
Check tolerance cm3/1000S. : 3.0

HIGH IDLE

Ref. pressure ALDA / ADA hPa : 1900
Rated speed rpm : 2200
rack travel mm : 9.35
Tolerance mm : + - 0.20
Del. quantity cm3/1000 strokes : 38.9
Tolerance cm3/1000 strokes : + - 2.0
Check tolerance cm3/1000S. : + - 3.0
Spread

Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 21.60
Tolerance mm : + - 1.50
Del. quantity
cm³/1000 strokes : 65.8
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 5.0
Spred
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 6.0

LOW IDLE

Rated speed rpm : 360
rack travel mm : 5.30
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 7.8
Check tolerance
cm³/1000S. : + - 2.3
Spred
Check tolerance
cm³/1000S. : 1.5

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever
position degree : 8.0
tolerance degree : + - 2.0

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Rated speed rpm : 360
Rack travel in mm : 11.70
Tolerance mm : + - 0.70
Current A : 1.80

Rated speed rpm : 2700
Rack travel in mm : 0.50
Tolerance mm : + - 0.50

Current short-
duration A : 3.00

Starting test

Rated speed rpm : 100
Current A : 1.80

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Test with KDEP-P400
Voltage Volt : 1.636
Tolerance Volt : + - 0.003
Check tolerance
Volt : + - 0.001
ADJUSTMENT
Rated speed rpm : 900
Ref. pressure
ALDA / ADA hPa : 1900
Rack travel in mm
Tolerance Volt : + - 0.030
Check tolerance
Volt : + - 0.060

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 360
Vacuum hPa : -450.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 0 400 075 918

Injection pump
Pump designation : PES5M55C320RS191
EP type number : 0 410 055 951

Governor
Governor design. : RSF335/2000M88
Governor no. : 0 420 021 293

Cust. part No. :

Customer-spec. information

Customer : DPICO
Motor : OM662-D29LA
Power KW : 88.0

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.0

Test nozzle holder
assembly : 1 688 901 111

Opening pressure
bar : 148.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 1.75
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 21.00
Tolerance mm : + 1.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Start of delivery blocking

*NW after s.o.d. : 16.50
Tolerance : + 0.20
Check
tolerance *NW : + 0.30

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 13.75
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 53.1

Tolerance
cm³/1000 strokes : + 0.5

Check tolerance
cm³/1000S. : + 1.5

Spread
Tolerance
cm³/1000 strokes : 2.5

Check tolerance : 3.0
 cm³/1000s.

 Rated speed rpm : 385

 Rack travel in mm : 5.80
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 8.5
 Tolerance cm³/1000 strokes : + 0.5
 Spread
 Tolerance cm³/1000 strokes : 1.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

IDLE STAGE

Rack travel in mm : 5.50
 Tolerance mm : + 0.10

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
 Ref. pressure ALDA / ADA hPa : 1600
 Del. quantity cm³/1000 strokes : 53.1
 Tolerance cm³/1000 strokes : + 0.5
 Check tolerance cm³/1000s. : + 1.5
 Spread
 Tolerance cm³/1000 strokes : 2.5
 Check tolerance cm³/1000s. : 3.0

RATED SPEED

control lever position degree : 50.0

 Rated speed rpm : 2250
 rack travel mm : 8.75
 Tolerance mm : + 0.20

 Rated speed rpm : 2600
 rack travel mm : 0.50
 Tolerance mm : + 0.60

SET IDLE CONTROL LEVER POSITION

Rated speed rpm : 1000

 CRT mm max. : 1.85

LOW IDLE

control lever position degree : 11.0

Setting point w/out bumper spring
 Rated speed rpm : 385
 rack travel mm : 5.80

SET IDLE AUXILIARY SPRING

Rated speed rpm : 500
 rack travel mm : 3.90
 Tolerance mm : + 0.10

Load pick-up

Rated speed rpm : 200
 rack travel mm : 12.50

 Rated speed rpm : 1000

 CRT mm max. : 1.85

 rack travel mm : 5.80
 Rated speed rpm : 385

TORQUE CONTROL

Rated speed rpm : 1000
 rack travel mm : 13.75
 Tolerance mm : + 0.05

Rated speed rpm : 1700
 rack travel mm : 13.45
 Tolerance mm : + 0.10

Rated speed rpm : 2000
 rack travel mm : 12.95
 Tolerance mm : + 0.10

Rated speed rpm : 1000
 rack travel mm : 11.80
 Tolerance mm : + 0.10

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm : 1000
 Ref. pressure ALDA / ADA hPa : 1400
 rack travel mm : 0.30
 Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 1000
 Ref. pressure ALDA / ADA hPa : 1100
 rack travel mm : 1.95
 Tolerance mm : + - 0.10

Ref. pressure ALDA / ADA hPa : 750
 rack travel mm : 3.80
 Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Ref. pressure ALDA / ADA hPa : 1600
 Rated speed rpm : 1700
 Del. quantity cm3/1000 strokes : 53.8
 Tolerance cm3/1000 strokes : + - 0.8
 Check tolerance cm3/1000S. : + - 1.8
 Spread
 Tolerance cm3/1000 strokes : 2.5
 Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1600
 Rated speed rpm : 2000
 Spread
 Del. quantity cm3/1000 strokes : 52.1
 Tolerance cm3/1000 strokes : + - 1.0
 Check tolerance cm3/1000S. : + - 2.0
 Spread
 Tolerance cm3/1000 strokes : 2.5
 Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1100
 Rated speed rpm : 1000

Del. quantity cm3/1000 strokes : 43.2
 Tolerance cm3/1000 strokes : + - 0.5
 Check tolerance cm3/1000S. : + - 1.5
 Spread
 Tolerance cm3/1000 strokes : 2.5
 Check tolerance cm3/1000S. : 3.0

Ref. pressure ALDA / ADA hPa : 1100
 Rated speed rpm : 1000
 Del. quantity cm3/1000 strokes : 43.2
 Tolerance cm3/1000 strokes : + - 0.5
 Check tolerance cm3/1000S. : + - 1.5
 Spread
 Tolerance cm3/1000 strokes : 2.5
 Check tolerance cm3/1000S. : 3.0

HIGH IDLE

Ref. pressure ALDA / ADA hPa : 1600
 Rated speed rpm : 2250
 rack travel mm : 8.75
 Tolerance mm : + - 0.20
 Del. quantity cm3/1000 strokes : 32.9
 Tolerance cm3/1000 strokes : + - 2.0
 Check tolerance cm3/1000S. : + - 3.0
 Spread
 Tolerance cm3/1000 strokes : 2.5
 Check tolerance cm3/1000S. : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : 21.50
 Tolerance mm : + - 1.50
 Del. quantity cm3/1000 strokes : 58.3
 Tolerance cm3/1000 strokes : + - 4.0
 Check tolerance cm3/1000S. : + - 5.0

Spred
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 6.0

End of test specification sheet

LOW IDLE

Rated speed rpm : 385
Del. quantity
cm³/1000 strokes : 9.5
Check tolerance
cm³/1000S. : + 2.3
Spred
Check tolerance
cm³/1000S. : 1.5

control lever
position degree : > 45.00

control lever
position degree : < 42.50

SETTING PNEUMATIC FAST IDLE (PLA)
(PLA) POSITION

control lever
position degree : 11.0
Rated speed rpm : 400
Rack travel in mm : 8.85
Tolerance mm : + 0.80
Del. quantity
cm³/1000 strokes : 25.3
Tolerance
cm³/1000 strokes : + 4.0
Check tolerance
cm³/1000S. : + 5.0
Vacuum hPa : 400.0

TESTING PNEUMATIC SHUTOFF DEVICE

Rated speed rpm : 385
Vacuum hPa : -450.0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.10.97
Test oil : ISO 4113

Combination No. : 0 401 856 159

Injection pump
Pump designation : PE6P110A721RS369
EP type number : 0 411 816 121

Governor
Governor design. : RQ300/1300PA412-6
Governor no. : 0 421 801 638

Cust. part No. :

Customer-spec. information

Customer : HAEP
Motor : WD615.60

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0

x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1300

Rack travel in mm : 14.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 147.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.5

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 300

Rack travel in mm : 6.00
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 21.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 5.5

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 600

Rack travel in mm : 16.40
Tolerance mm : + 0.60

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1300

Aneroid pressure

hPa : 700

Del. quantity
cm³/1000 strokes : 147.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.5

Spred

Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 109.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 13.10
Rated speed rpm : 1353
Tolerance 1/min : + 8

rack travel mm : 4.00
Rated speed rpm : 1440
Tolerance 1/min : + 15

rack travel mm : 0.70
Tolerance mm : + 0.70
Rated speed rpm : 1550

LOW IDLE

control lever
position degree : 78.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 7.40

Testing:

Rated speed rpm : 300
rack travel mm : 6.00
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 420
Tolerance 1/min : + 20

TORQUE CONTROL

Dimension a mm : 0.40
Rated speed rpm : 1300
rack travel mm : 14.15
Tolerance mm : + 0.05

Rated speed rpm : 700
rack travel mm : 14.40
Tolerance mm : + - 0.10

Rated speed rpm : 700
rack travel mm : 14.80
Tolerance mm : + - 0.20

Rated speed rpm : 1100
rack travel mm : 14.40
Tolerance mm : + - 0.20

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 700
Pressure hPa : 700
rack travel mm : 14.40
Tolerance mm : + - 0.10

Rated speed rpm : 700
Pressure hPa : -
rack travel mm : 12.50
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 700
Pressure hPa : 300
rack travel mm : 13.00
Tolerance mm : + - 0.10

Pressure hPa : 390
rack travel mm : 14.15
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 700
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 137.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 700

Del. quantity
cm³/1000 strokes : 102.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 17.00
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 145.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.00
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 21.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 5.5
Spread
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 7.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.10.97
Test oil : ISO 4113

Combination No. : 0 402 044 700

Injection pump
Pump designation : PES4P110A320RS3350
EP type number : 0 412 014 700

Governor
Governor design. : RQV350...1400PA1221K
Governor no. : 0 421 815 472

Cust. part No. : 16700-D8703 / M
: -2004

Customer-spec. information

Customer : NMI
Motor : B4.40 EURO II
Power KW : 101.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Stroke mm : 4.55
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 4- 2- 1- 3

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : 180.00
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 4

BASIC SETTING

Rated speed rpm : 1300

Rack travel in mm : 15.40
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 178.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 350

Rack travel in mm : 9.40
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 31.0

Tolerance
cm³/1000 strokes : + 2.5

Check tolerance
cm³/1000S. : + 5.0

Spred
Tolerance

cm³/1000 strokes : 6.0
Check tolerance

cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1417

guide sleeve
travel mm : 9.99
Tolerance mm : + 0.15

Rated speed rpm : 350

guide sleeve
travel mm : 1.46
Tolerance mm : + 0.20

Rated speed rpm : 994

guide sleeve
travel mm : 6.77
Tolerance mm : + 0.25

Rated speed rpm : 610

guide sleeve
travel mm : 3.96

Tolerance mm : + 0.25

Rated speed rpm : 1730

guide sleeve

travel mm : 13.50

Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever

position degree : - 1

Rated speed rpm : 1515

Rack travel in mm : 14.50

Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1300

Aneroid pressure

hPa : 1500

Del. quantity

cm³/1000 strokes : 178.0

Tolerance

cm³/1000 strokes : + 1.0

Check tolerance

cm³/1000S. : + 3.0

Spred

Tolerance

cm³/1000 strokes : 5.0

Check tolerance

cm³/1000S. : 9.0

CONTROL LEVER

control lever

position degree : 65.0

tolerance degree : + 4.0

control lever

position degree : 122.0

tolerance degree : + 4.0

RATED SPEED

rack travel mm : 14.40

Rated speed rpm : 1410

Tolerance 1/min : + 5

rack travel mm : 4.00

Rated speed rpm : 1585

Tolerance 1/min : + 15

rack travel mm : 0.50

Tolerance mm : + 0.50

Rated speed rpm : 1640

LOW IDLE

control lever
position degree : 82.0
tolerance degree : + 4.0

control lever
position degree : 26.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 10.70

Testing:

Rated speed rpm : 350
rack travel mm : 9.40
Tolerance mm : + 0.10

Rated speed rpm : 500

TORQUE CONTROL

Rated speed rpm : 1300
rack travel mm : 15.40
Tolerance mm : + 0.05

Rated speed rpm : 780
rack travel mm : 13.70
Tolerance mm : + 0.15

Rated speed rpm : 1000
rack travel mm : 14.30
Tolerance mm : + 0.20

Rated speed rpm : 1250
rack travel mm : 15.40
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1300
Pressure hPa : 1500
rack travel mm : 15.40
Tolerance mm : + 0.10

Rated speed rpm : 1300

Pressure hPa : -
rack travel mm : 12.60
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 1300

Pressure hPa : 660
rack travel mm : 14.30
Tolerance mm : + 0.10

Pressure hPa : 520
rack travel mm : 13.10
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : > 270

Check
speed 1/min : > 80
Check
speed 1/min : > 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 780
Del. quantity
cm³/1000 strokes : 154.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 5.0
Spread
Tolerance
cm³/1000 strokes : 12.0
Check tolerance
cm³/1000S. : 16.0

Aneroid pressure
hPa : 1500
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 165.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 136.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000s. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 200.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000s. : + - 19.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 9.40
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 31.0
Tolerance
cm³/1000 strokes : + - 2.5
Check tolerance
cm³/1000s. : + - 5.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000s. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 0 402 074 700

Injection pump
Pump designation : PES4P110B720RS3383
EP type number : 0 412 014 701

Governor
Governor design. : RSV300...1100P1A667
Governor no. : 0 421 833 582

Cust. part No. : 9880216

Customer-spec. information
Customer : LIEBHERR
Motor : D 924 TI-E A2
Power KW : 149.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 207.0
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.20
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 4- 2- 1- 3

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check tolerance °NW : + 0.75

Barrel no. : 4

BASIC SETTING

Rated speed rpm : 880

Rack travel in mm : 13.85
Tolerance mm : + 0.05

Det. quantity
 cm³/1000 strokes : 203.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.5
 Spread
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

Rated speed rpm : 500
 Rack travel in mm : 4.60
 Tolerance mm : + 0.10
 Det. quantity
 cm³/1000 strokes : 24.0
 Tolerance
 cm³/1000 strokes : + 3.0
 Check tolerance
 cm³/1000S. : + 5.5
 Spread
 Tolerance
 cm³/1000 strokes : 4.5
 Check tolerance
 cm³/1000S. : 7.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + 0.20
 governor spring
 pre-tension
 click setting x : 5.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 880

Aneroid pressure
 hPa : 1500
 Det. quantity
 cm³/1000 strokes : 203.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.5
 Spread
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 7.5

CONTROL LEVER

control lever
 position degree : 94.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 12.85
 Rated speed rpm : 920
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 990
 Tolerance 1/min : + 15
 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1200
 rack travel mm : 4.00
 Rated speed rpm : 1000
 Tolerance 1/min : + 15

LOW IDLE

control lever
 position degree : 83.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring

Rated speed rpm : 500
 rack travel mm : 2.80
 Tolerance mm : + 0.10

Testing:

Rated speed rpm : 500
 rack travel mm : 4.60
 Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 595
Tolerance 1/min : + 50

TORQUE CONTROL
Rated speed rpm : 880
rack travel mm : 13.85
Tolerance mm : + 0.05

Rated speed rpm : 500
rack travel mm : 13.90
Tolerance mm : + 0.10

Rated speed rpm : 700
rack travel mm : 13.90
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 1500
rack travel mm : 13.85
Tolerance mm : + 0.10

Rated speed rpm : 550
Pressure hPa : -
rack travel mm : 11.25
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 550
Pressure hPa : 830
rack travel mm : 13.20
Tolerance mm : + 0.05

Pressure hPa : 750
rack travel mm : 11.90
Tolerance mm : + 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 225.0
Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : 1500
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 214.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 170.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + 15.0
Check tolerance
cm³/1000S. : + 19.0

LOW IDLE

Rated speed rpm : 500
Rack travel in mm : 4.60
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 5.5
Speed
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 7.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 27.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 680

Injection pump
Pump designation : PE6P120A320RS7447
EP type number : 0 412 626 970

Governor
Governor design. : RQ275/1150PA1361
Governor no. : 0 421 801 825

Cust. part No. : 1329586

Customer-spec. information

Customer : DAF
Motor : GS 200-RQ
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + - 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5
Tolerance bar : + - 0.1

Overflow quantity
min. l/h : 150
Tolerance l/h : + - 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + - 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 5.25
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 11.70
Tolerance mm : + - 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + - 0.50
Check
tolerance °NW : + - 0.75

Start of delivery mark

Tolerance : + - 0.10
Check
tolerance °NW : + - 0.70

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.70
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 178.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : 5.05
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 24.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1205

guide sleeve
travel mm : 6.49

Tolerance mm : + - 0.15

Rated speed rpm : 275

guide sleeve
travel mm : 1.97

Tolerance mm : + - 0.20

Rated speed rpm : 1150

guide sleeve
travel mm : 6.00

Tolerance mm : + - 0.10

Rated speed rpm : 356

guide sleeve
travel mm : 4.47
Tolerance mm : + - 0.10

Rated speed rpm : 440
guide sleeve
travel mm : 6.00
Tolerance mm : + - 0.10

Rated speed rpm : 1360
guide sleeve
travel mm : 11.50
Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600

Rack travel in mm : 16.00
Tolerance mm : + - 0.40

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 178.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 99.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 10.70

Rated speed rpm : 1202

Tolerance 1/min : + - 8

rack travel mm : 4.00

Rated speed rpm : 1280

Tolerance 1/min : + - 15

rack travel mm : 0.70

Tolerance mm : + - 0.70

Rated speed rpm : 1450

LOW IDLE

control lever
position degree : 73.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm min. : > 6.40

Testing:

Rated speed rpm : 275
rack travel mm : 5.05
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 355
Tolerance 1/min : + - 20

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 11.70
Tolerance mm : + - 0.05

Rated speed rpm : 1150
rack travel mm : 11.70
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST**SETTING**

Rated speed rpm : 600
Pressure hPa : 1000
rack travel mm : 11.70
Tolerance mm : + - 0.05

Rated speed rpm : 600
Pressure hPa : -
rack travel mm : 6.70
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 600
Pressure hPa : 220
rack travel mm : 10.50

Tolerance mm : + - 0.05
Pressure hPa : 100
rack travel mm : 8.10
Tolerance mm : + - 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : -
Rated speed rpm : 600
Del. quantity cm³/1000 strokes : 101.0
Tolerance cm³/1000 strokes : + - 3.0
Check tolerance cm³/1000S. : + - 6.0
Spread
Tolerance cm³/1000 strokes : 8.0
Check tolerance cm³/1000S. : 12.0

LOW IDLE

Rated speed rpm : 275
Rack travel in mm : 5.05
Tolerance mm : + - 0.10
Del. quantity cm³/1000 strokes : 24.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 4.0
Spread
Tolerance cm³/1000 strokes : 8.0
Check tolerance cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 23.10.97
Test oil : ISO 4113

Combination No. : 0 402 648 703

Injection pump
Pump designation : PE&P120A520LS7880
EP type number : 0 412 628 889

Governor
Governor design. : RQV350...1050PA1352
Governor no. : 0 421 814 197

Cust. part No. : 0270747202

Customer-spec. information

Customer : MB-NFZ
Motor : OM442 LA euromot
Power KW : 405.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 200
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.75
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 8- 7- 2- 6- 3
: - 5- 4- 1

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 8

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 15.00
 Tolerance mm : + 0.05
 Del. quantity cm³/1000 strokes : 282.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 9.0
 Rated speed rpm : 350
 Rack travel in mm : 5.70
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 19.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1110
 guide sleeve travel mm : 8.10
 Tolerance mm : + 0.15
 Rated speed rpm : 350
 guide sleeve travel mm : 1.48
 Tolerance mm : + 0.20
 Rated speed rpm : 900
 guide sleeve travel mm : 5.69
 Tolerance mm : + 0.25

Rated speed rpm : 580
 guide sleeve travel mm : 3.62
 Tolerance mm : + 0.25
 Rated speed rpm : 1204
 guide sleeve travel mm : 10.00
 Tolerance mm : + 0.25
 Rated speed rpm : 1300
 guide sleeve travel mm : 11.50
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
 Rated speed rpm : 1154

Rack travel in mm : 14.00
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
 Aneroid pressure hPa : 1300
 Del. quantity cm³/1000 strokes : 282.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever position degree : 119.0
 tolerance degree : + 4.0

RATED SPEED
 rack travel mm : 14.00
 Rated speed rpm : 1098
 Tolerance 1/min : + 8
 rack travel mm : 4.00
 Rated speed rpm : 1190

Tolerance 1/min : + 15

rack travel mm : 0.75
Tolerance mm : + 0.75
Rated speed rpm : 1250

LOW IDLE

control lever
position degree : 67.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 7.50

Testing:

Rated speed rpm : 350
rack travel mm : 5.70
Tolerance mm : + 0.10

Rated speed rpm : 400

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 15.00
Tolerance mm : + 0.05

Rated speed rpm : 600
rack travel mm : 15.00
Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : -

MEASUREMENT

Pressure hPa : 500
rack travel mm : 1.40
Tolerance mm : + 0.05

Pressure hPa : 1000
rack travel mm : 5.80
Tolerance mm : + 0.20

Start interlock

Rated speed rpm : > 210
Rated speed rpm : < 270

Check
speed 1/min : > 190
Check
speed 1/min : < 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1300
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 298.5
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 132.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

REDUCED QUANTITY

Aneroid pressure
hPa : 1300
Rated speed rpm : 1050
Del. quantity
cm³/1000 strokes : 225.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 5.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 280.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.70
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 23.10.97
Test oil : ISO 4113

Combination No. : 0 402 666 805

Injection pump
Pump designation : PE6P120A320/3LS7914
EP type number : 0 412 626 968

Governor
Governor design. : RSV600...1050P0A642
Governor no. : 0 421 833 556

Cust. part No. : 0280743702

Customer-spec. information

Customer : MB-NFZ
Motor : OM 441 LA
Power KW : 300.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0
Tolerance bar : +- 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : +- 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : +- 1.0

Prestroke mm : 4.75
Tolerance mm : +- 0.05
Check tolerance mm : +- 0.10

Rack travel in mm : 19.00
Tolerance mm : +- 0.50

Firing order : 6- 3- 5- 2- 4-
: 1

Phasing : 0-45-120-165-240
: -285
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Start of delivery mark

Tolerance : +- 0.10
Check tolerance °NW : +- 0.75

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1075

Rack travel in mm : 13.70
Tolerance mm : +- 0.05

Del. quantity
cm³/1000 strokes : 251.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 600

Rack travel in mm : 4.10
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 17.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + 0.20

governor spring
pre-tension
click setting x : 1.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1075
Aneroid pressure
hPa : -
Del. quantity
cm³/1000 strokes : 251.0

Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spred
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 86.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 12.70
Rated speed rpm : 1115
Tolerance 1/min : + 5
Check
speed 1/min : + 10

LOW IDLE

control lever
position degree : 71.0
tolerance degree : + 4.0

Testing:

Rated speed rpm : 600
rack travel mm : 4.10
Tolerance mm : + 0.10

SET IDLE AUXILIARY SPRING

rack travel mm : 2.00

TORQUE CONTROL
Rated speed rpm : 1075
rack travel mm : 13.70
Tolerance mm : + 0.05

Rated speed rpm : 800
rack travel mm : 14.75
Tolerance mm : + 0.10

Rated speed rpm : 1000
rack travel mm : 14.35
Tolerance mm : + 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 291.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 290.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 600
Rack travel in mm : 4.10
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 17.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 04.07.96
Test oil : ISO 4113

Combination No. : 0 402 735 820

Injection pump
Pump designation : PES5P120A720/3LS7250
: -1
EP type number : 0 412 725 819

Governor
Governor design. : RQV325...1000PA960
: -10K
Governor no. : 0 421 815 483

Cust. part No. : 51.11103-7484

Customer-spec. information

Customer : MAN
Motor : D2865LF06/LU06
Power KW : 235.0

TEST BENCH REQUIREMENTS

Inlet Line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : +- 0.1

Overflow quantity
min. l/h : 150
Tolerance l/h : +- 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5

Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : +- 1.0

Prestroke mm : 4.85
Tolerance mm : +- 0.05
Check tolerance mm : +- 0.10

Rack travel in mm : 12.50
Tolerance mm : +- 0.50

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Start of delivery blocking

Tolerance : +- 0.10
Check tolerance °NW : +- 0.75

Barrel no. : 5

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 12.30
Tolerance mm : +- 0.05

Del. quantity cm³/1000 strokes : 251.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spreed
 Tolerance cm³/1000 strokes : 10.0
 Check tolerance cm³/1000S. : 14.0
 Rated speed rpm : 325
 Rack travel in mm : 5.50
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 50.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0
 Spreed
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1060
 guide sleeve travel mm : 10.74
 Tolerance mm : + 0.15
 Rated speed rpm : 325
 guide sleeve travel mm : 2.20
 Tolerance mm : + 0.20
 Rated speed rpm : 768
 guide sleeve travel mm : 7.26
 Tolerance mm : + 0.25
 Rated speed rpm : 480

guide sleeve travel mm : 3.97
 Tolerance mm : + 0.25
 Rated speed rpm : 1240
 guide sleeve travel mm : 13.50
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
 Rated speed rpm : 1106
 Rack travel in mm : 11.20
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Aneroid pressure hPa : 1200
 Del. quantity cm³/1000 strokes : 251.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spreed
 Tolerance cm³/1000 strokes : 10.0
 Check tolerance cm³/1000S. : 14.0

CONTROL LEVER

control lever position degree : 300.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 11.20
 Rated speed rpm : 1045
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1125
 Tolerance 1/min : + 15
 rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1250

LOW IDLE**control lever**

position degree : 254.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 225

CRT mm min. : > 7.50

Testing:

Rated speed rpm : 325
rack travel mm : 5.50
Tolerance mm : + - 0.10

Rated speed rpm : 305

TORQUE CONTROL

Rated speed rpm : 900
rack travel mm : 12.30
Tolerance mm : + - 0.05

Rated speed rpm : 1000
rack travel mm : 12.20
Tolerance mm : + - 0.10

Rated speed rpm : 650
rack travel mm : 12.15
Tolerance mm : + - 0.10

Rated speed rpm : 400
rack travel mm : 11.25
Tolerance mm : + - 0.15

ANEROID/ALTITUDE COMPENSATOR TEST**SETTING**

Rated speed rpm : 900
Pressure hPa : 1200
rack travel mm : 12.30
Tolerance mm : + - 0.05

Rated speed rpm : 900
Pressure hPa : -
rack travel mm : 8.50
Tolerance mm : + - 0.15

MEASUREMENT

Rated speed rpm : 900
Pressure hPa : 170
rack travel mm : 8.85
Tolerance mm : + - 0.05

Pressure hPa : 600
rack travel mm : 11.45
Tolerance mm : + - 0.15

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 270

Check speed 1/min : > 80
Check speed 1/min : < 290

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1200
Rated speed rpm : 1000
Del. quantity cm³/1000 strokes : 239.0
Tolerance cm³/1000 strokes : + - 3.0
Check tolerance cm³/1000S. : + - 6.0

Aneroid pressure hPa : 1200
Rated speed rpm : 650
Del. quantity cm³/1000 strokes : 269.0
Tolerance cm³/1000 strokes : + - 3.0
Check tolerance cm³/1000S. : + - 6.0

Aneroid pressure hPa : -
Rated speed rpm : 500
Del. quantity cm³/1000 strokes : 160.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 4.0

STARTING FUEL DELIVERY

Del. quantity
cm³/1000 strokes : 190.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 325

Rack travel in mm : 5.50
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 632

Injection pump
Pump designation : PES6P120A720RS7366
EP type number : 0 412 726 933

Governor
Governor design. : RQ300/1050PA134C
Governor no. : 0 421 801 820

Cust. part No. :

Customer-spec. information

Customer : IVECO-FRANCE
Motor : 8460.41S.7031
Power KW : 254.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 2 417 413 076

Inlet press. bar : 2.5
Tolerance bar : +- 0.1

Overflow quantity
min. l/h : 160
Tolerance l/h : +- 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : +- 1.0

Prestroke mm : 2.85
Tolerance mm : +- 0.05
Check
tolerance mm : +- 0.10

Rack travel in mm : 20.50
Tolerance mm : +- 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : +- 0.50
Check
tolerance °NW : +- 0.75

Start of delivery mark

Check
tolerance °NW : +- 0.40

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 12.95

Tolerance mm : \pm 0.05
 Del. quantity cm³/1000 strokes : 289.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0
 Rated speed rpm : 300
 Rack travel in mm : 6.00
 Tolerance mm : \pm 0.10
 Del. quantity cm³/1000 strokes : 23.0
 Tolerance cm³/1000 strokes : \pm 3.0
 Check tolerance cm³/1000S. : \pm 6.0
 Spread
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1110
 guide sleeve travel mm : 6.85
 Tolerance mm : \pm 0.15
 Rated speed rpm : 300
 guide sleeve travel mm : 1.97
 Tolerance mm : \pm 0.20
 Rated speed rpm : 1050
 guide sleeve travel mm : 6.50
 Tolerance mm : \pm 0.10
 Rated speed rpm : 697

guide sleeve travel mm : 6.13
 Tolerance mm : \pm 0.10
 Rated speed rpm : 399
 guide sleeve travel mm : 4.74
 Tolerance mm : \pm 0.10
 Rated speed rpm : 480
 guide sleeve travel mm : 6.00
 Tolerance mm : \pm 0.10
 Rated speed rpm : 1270
 guide sleeve travel mm : 11.50
 Tolerance mm : \pm 0.50
 Rated speed rpm : 877
 guide sleeve travel mm : 6.38
 Tolerance mm : \pm 0.10

GUIDE SLEEVE POSITION

control lever position degree : 109
 Rated speed rpm : 500

Rack travel in mm : 20.00
 Tolerance mm : \pm 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
 Aneroid pressure hPa : 1200
 Del. quantity cm³/1000 strokes : 289.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

RATED SPEED
 rack travel mm : 11.90
 Rated speed rpm : 1103
 Tolerance 1/min : \pm 8
 Check speed 1/min : \pm 13

rack travel mm : 4.00
Rated speed rpm : 1190
Tolerance 1/min : + 15
Check
speed 1/min : + 20

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 1350

LOW IDLE

control lever
position degree : 74.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : > 8.15

Testing:

Rated speed rpm : 300
rack travel mm : 6.00
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 390
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 12.95
Tolerance mm : + 0.05

Rated speed rpm : 500
rack travel mm : 14.10
Tolerance mm : + 0.10

Rated speed rpm : 700
rack travel mm : 13.90
Tolerance mm : + 0.10

Rated speed rpm : 875
rack travel mm : 13.25
Tolerance mm : + 0.15

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1200
rack travel mm : 14.10
Tolerance mm : + 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 9.30
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 250
rack travel mm : 10.45
Tolerance mm : + 0.20

Pressure hPa : 500
rack travel mm : 12.60
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 200
Rated speed rpm : < 240

Check
speed 1/min : > 180
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 322.0
Tolerance
cm³/1000 strokes : + 4.0
Check tolerance
cm³/1000S. : + 7.0

Aneroid pressure
hPa : -
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 151.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 11.30
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 110.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.00
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 23.10.97
Test oil : ISO 4113

Combination No. : 0 402 746 647

Injection pump
Pump designation : PES6P120A720RS7366
EP type number : 0 412 726 933

Governor
Governor design. : RQV275...1100PA1208K
Governor no. : 0 421 815 459

Cust. part No. :

Customer-spec. information
Customer : IVECO-FRANCE
Motor : 8460.41.4000

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 076

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 12.45
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 276.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spread

Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

Rated speed rpm : 275
 Rack travel in mm : 6.70
 Tolerance mm : + - 0.10
 Del. quantity
 cm³/1000 strokes : 23.0
 Tolerance
 cm³/1000 strokes : + - 3.0
 Check tolerance
 cm³/1000S. : + - 6.0
 Spread
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1155
 guide sleeve
 travel mm : 9.75
 Tolerance mm : + - 0.15
 Rated speed rpm : 275
 guide sleeve
 travel mm : 1.70
 Tolerance mm : + - 0.20
 Rated speed rpm : 790
 guide sleeve
 travel mm : 6.42
 Tolerance mm : + - 0.25
 Rated speed rpm : 460
 guide sleeve
 travel mm : 3.77
 Tolerance mm : + - 0.25
 Rated speed rpm : 1440
 guide sleeve
 travel mm : 13.50
 Tolerance mm : + - 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure
 hPa : 1200
 Del. quantity
 cm³/1000 strokes : 276.0
 Tolerance
 cm³/1000 strokes : + - 1.0
 Check tolerance
 cm³/1000S. : + - 4.0
 Spread
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 117.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 11.40
 Rated speed rpm : 1145
 Tolerance 1/min : + - 5
 Check
 speed 1/min : + - 10

rack travel mm : 4.00
 Rated speed rpm : 1260
 Tolerance 1/min : + - 15
 Check
 speed 1/min : + - 20

rack travel mm : 0.50
 Tolerance mm : + - 0.50
 Rated speed rpm : 1350

LOW IDLE

control lever
 position degree : 76.0
 tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 8.20

Testing:

Rated speed rpm : 275
 rack travel mm : 6.70
 Tolerance mm : + - 0.10

Rated speed rpm : 335

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 12.45
Tolerance mm : + - 0.05

Rated speed rpm : 650
rack travel mm : 13.30
Tolerance mm : + - 0.10

Rated speed rpm : 800
rack travel mm : 13.30
Tolerance mm : + - 0.20

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 800
Pressure hPa : 1200
rack travel mm : 13.30
Tolerance mm : + - 0.10

Rated speed rpm : 800
Pressure hPa : -
rack travel mm : 9.40
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 800
Pressure hPa : 290
rack travel mm : 10.60
Tolerance mm : + - 0.20

Pressure hPa : 520
rack travel mm : 12.50
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 170
Rated speed rpm : < 220

Check speed 1/min : > 150
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : 1200
Rated speed rpm : 650
Del. quantity
cm3/1000 strokes : 283.0
Tolerance
cm3/1000 strokes : + - 3.0
Check tolerance
cm3/1000S. : + - 6.0

Aneroid pressure

hPa : 1200
Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 295.5
Tolerance
cm3/1000 strokes : + - 3.0
Check tolerance
cm3/1000S. : + - 6.0

Aneroid pressure

hPa : -
Rated speed rpm : 650
Del. quantity
cm3/1000 strokes : 152.0
Tolerance
cm3/1000 strokes : + - 1.0
Check tolerance
cm3/1000S. : + - 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 12.00
Tolerance mm : + - 0.30
Del. quantity
cm3/1000 strokes : 115.0
Tolerance
cm3/1000 strokes : + - 15.0
Check tolerance
cm3/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 275
Rack travel in mm : 6.70
Tolerance mm : + - 0.10
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + 6.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 0 402 796 041

Injection pump
Pump designation : PES6H110/320RS19
EP type number : 0 412 716 006

Governor
Governor design. : RE36
Governor no. : 0 421 890 374

Cust. part No. : 8192870 P04 v.07/97

Customer-spec. information

Customer : VOLVO-TRUCK
Motor : D7C
Power KW : 228.0

TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

Pump-specific values
in Section (B)
must be observed!

(A) INJECTION PUMP SETTINGS
No basic setting.
Setting of constant delivery
under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 8.00
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2
: - 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check
tolerance °NW : + 0.75

(B) POSITIONER TESTING
Warm-up time: 3 minutes at
n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR
POSITION

Engine speed min-1: 0

Setting point
(P, R and H pump)

Uact V : 3.100
 CRT mm : 13.00
 Tolerance mm : +/- 0.05
 Check tolerance mm : +/- 0.10

Check value
(P, R and H pump)

Uact V : 1.700
 CRT mm : 6.15
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.30

Setting point
(M pump)

Uact V : 3.100
 CRT mm : 12.50
 Tolerance mm : +/- 0.05
 Check tolerance mm : +/- 0.10

Check value
(M pump)

Uact V : 1.700
 CRT mm : 5.50
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.30

Stop position
(P, R and H pump)

Uact V : Value with
deenergised adjusting magnet
and control rod in
stop position.
 CRT mm : 0.75
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.35

Stop position
(M pump)

Uact V : 0,720
 Tolerance Volt : +/- 0,065
 CRT mm : 1,00

Starting position
(M pump)

Uact V : 4,500
 Tolerance Volt : +/- 0,115
 CRT mm : 19,00
 Tolerance mm : +/- 0,80

ENGINE-SPEED SENSOR
(ALL P and R pumps not
H and M pumps)

Test with control rod
in stop position

Engine speed min-1: 60
 Amplitude V : 1.4
 Tolerance V : +/- 0.6
 Check tolerance V : +/- 1.20

Engine speed min-1: 600
 Difference
 Amplitude to
 Amplitude V : max.1.4

(C) INJECTION PUMP WITH POSITIONER

TEST POINT V1

Rated speed rpm : 660
 Uact V : 3.000
 Prestroke solenoid
 Stroke mm : 5.30
 Del. quantity
 cm³/1000 strokes : 359.0
 Tolerance
 cm³/1000 strokes : +/- 1.0
 Check tolerance
 cm³/1000S. : +/- 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 11.0
 FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 950

TEST POINT L1

Rated speed rpm : 300
 Uact V : 1.500
 Tolerance Volt : +/- 0.060
 Check tolerance
 Volt : +/- 0.060
 Prestroke solenoid
 Stroke mm : 5.30
 Del. quantity
 cm³/1000 strokes : 20.0
 Tolerance
 cm³/1000 strokes : +/- 2.0
 Spread

Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 07.01.97
Test oil : ISO 4113

Combination No. : 0 402 946 030

Injection pump
Pump designation : PES6P120A720RS8049
EP type number : 0 412 926 031

Governor
Governor design. : RQ750PA1299
Governor no. : 0 421 801 810

Cust. part No. : 1397781

Customer-spec. information

Customer : SCANIA
Motor : DSC1158A

TEST BENCH REQUIREMENTS

Inlet line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 14.50
Tolerance mm : + 1.50
Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 0.10
Check tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 13.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 363.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 11.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rack travel in mm : 3.10
Tolerance mm : + 0.20

Del. quantity
cm³/1000 strokes : 30.0

Tolerance
cm³/1000 strokes : + 4.0

Check tolerance
cm³/1000S. : + 6.0

Spred
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700

Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 363.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 11.0

Spred
Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 22.0
tolerance degree : + 4.0

control lever
position degree : 83.0
tolerance degree : + 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 750
rack travel mm : 12.10

Rated speed rpm : 778
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 751
rack travel mm : 12.10

Rated speed rpm : 779
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 752
rack travel mm : 12.10

Rated speed rpm : 780
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 753
rack travel mm : 12.10

Rated speed rpm : 781
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50

Tolerance mm : + - 0.50
Rated speed rpm : 850

Rated speed rpm : 754
rack travel mm : 12.10

Rated speed rpm : 782
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 850

Rated speed rpm : 755
rack travel mm : 12.10

Rated speed rpm : 783
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 850

TORQUE CONTROL
Rated speed rpm : 700
rack travel mm : 13.15
Tolerance mm : + - 0.05

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.15
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.80
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 230
rack travel mm : 8.45
Tolerance mm : + - 0.25

Pressure hPa : 580

rack travel mm : 10.45
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 7.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Tolerance mm : + - 0.20

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 24.10.97
Test oil : ISO 4113

Combination No. : 0 402 946 030A

Injection pump
Pump designation : PES6P120A720RS&049
EP type number : 0 412 926 031

Governor
Governor design. : RQ750PA1299
Governor no. : 0 421 801 810

Cust. part No. : 1397783

Customer-spec. information

Customer : SCANIA
Motor : DSC1158A

TEST BENCH REQUIREMENTS

Inlet line : EHAB

Test cil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : +- 0.1

Tolerance l/h : +- 20.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : +- 1.0

Prestroke mm : 3.65
Tolerance mm : +- 0.05
Check
tolerance mm : +- 0.10

Rack travel in mm : 14.50
Tolerance mm : +- 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : +- 0.30
Check
tolerance °NW : +- 0.75

Start of delivery blocking

Tolerance : +- 0.10
Check
tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 850

Rack travel in mm : 13.15
Tolerance mm : \pm 0.05

Del. quantity
cm³/1000 strokes : 338.0

Tolerance
cm³/1000 strokes : \pm 1.0

Check tolerance
cm³/1000S. : \pm 10.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rack travel in mm : 3.00
Tolerance mm : \pm 0.20

Del. quantity
cm³/1000 strokes : 30.0

Tolerance
cm³/1000 strokes : \pm 4.0

Check tolerance
cm³/1000S. : \pm 6.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 758
guide sleeve
travel mm : 4.98
Tolerance mm : \pm 0.15

Rated speed rpm : 480
guide sleeve
travel mm : 10.85
Tolerance mm : \pm 0.25

Rated speed rpm : 840
guide sleeve
travel mm : 18.50
Tolerance mm : \pm 0.25

Rated speed rpm : 795
guide sleeve
travel mm : 10.00
Tolerance mm : \pm 0.25

Rated speed rpm : 850
guide sleeve
travel mm : 11.50
Tolerance mm : \pm 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 850
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 338.0

Tolerance
cm³/1000 strokes : \pm 1.0

Check tolerance
cm³/1000S. : \pm 10.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 28.0
tolerance degree : \pm 4.0

control lever
position degree : 89.0
tolerance degree : \pm 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 750
rack travel mm : 12.10

Rated speed rpm : 778
Tolerance 1/min : \pm 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : \pm 0.50
Rated speed rpm : 850

Rated speed rpm : 751
rack travel mm : 12.10

Rated speed rpm : 779
Tolerance 1/min : \pm 4

rack travel mm : 4.00
rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 752
rack travel mm : 12.10

Rated speed rpm : 780
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 753
rack travel mm : 12.10

Rated speed rpm : 781
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 754
rack travel mm : 12.10

Rated speed rpm : 782
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 755
rack travel mm : 12.10

Rated speed rpm : 783
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

TORQUE CONTROL
Rated speed rpm : 850
rack travel mm : 13.15
Tolerance mm : + 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.15
Tolerance mm : + 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.80
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 230
rack travel mm : 8.45
Tolerance mm : + 0.25

Pressure hPa : 580
rack travel mm : 10.45
Tolerance mm : + 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 7.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Tolerance mm : + 0.20

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 29.10.97
Test oil : ISO 4113

Combination No. : 0 403 476 152

Injection pump
Pump designation : PES6MW100/720/3RS120
: 5
EP type number : 0 413 406 195

Governor
Governer design. : RSV350...1250MW0A403
Governer no. : 0 420 085 299

Cust. part No. : 0280742702

Customer-spec. information

Customer : MB-NFZ
Motor : OM 366 LA
Power KW : 185.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.25
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1230

Rack travel in mm : 15.30
Tolerance mm : + 0.05

Del. quantity
cm3/1000 strokes : 122.0

Tolerance
cm3/1000 strokes : + 1.0

Check tolerance
cm3/1000s. : + 3.0

Spread

Tolerance cm³/1000 strokes : 3.5
Check tolerance cm³/1000S. : 6.0

Rated speed rpm : 350
Rack travel in mm : 6.80
Tolerance mm : + 0.30
Del. quantity cm³/1000 strokes : 12.0
Tolerance cm³/1000 strokes : + 2.0
Check tolerance cm³/1000S. : + 4.5
Speed
Tolerance cm³/1000 strokes : 3.5
Check tolerance cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800
Rack travel in mm : 0.65
Tolerance mm : + 0.35
governor spring
pre-tension
click setting x : 5.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1230
Aneroid pressure hPa : 1000
Del. quantity cm³/1000 strokes : 122.0
Tolerance cm³/1000 strokes : + 1.0
Check tolerance cm³/1000S. : + 3.0
Speed
Tolerance cm³/1000 strokes : 3.5

Check tolerance cm³/1000S. : 6.0

CONTROL LEVER

control lever
position degree : 107.0
tolerance degree : + 4.0
RATED SPEED
rack travel mm : 14.30
Rated speed rpm : 1285
Tolerance 1/min : + 5
rack travel mm : 4.00
Rated speed rpm : 1390
Tolerance 1/min : + 5
rack travel mm : 0.85
Tolerance mm : + 0.55
Rated speed rpm : 1490

LOW IDLE

control lever
position degree : 75.0
tolerance degree : + 4.0
Setting point w/out bumper spring
Rated speed rpm : 100
CRT mm min. : > 19.00
Testing:
Rated speed rpm : 350
rack travel mm : 6.80
Tolerance mm : + 0.30
rack travel mm : 2.00
Rated speed rpm : 410
Tolerance 1/min : + 30

TORQUE CONTROL
Rated speed rpm : 1230
rack travel mm : 15.30
Tolerance mm : + 0.05
Rated speed rpm : 800
rack travel mm : 15.30
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1000
rack travel mm : 15.30
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.20
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 600
rack travel mm : 13.70
Tolerance mm : + - 0.15

Pressure hPa : 300
rack travel mm : 11.30
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 122.0
Tolerance
cm³/1000 strokes : + - 1.5
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 7.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 37.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 115.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 6.80
Tolerance mm : + - 0.30
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 29.10.97
Test oil : ISO 4113

Combination No. : 0 400 866 070

Injection pump
Pump designation : PES6A90D320/3RS2464
EP type number : 0 410 896 029

Governor
Governor design. : RSV325...1500A2C529R
Governor no. : 0 420 233 189

Cust. part No. :

Customer-spec. information
Customer : MWM

TEST BENCH REQUIREMENTS

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 0 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.20
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 68.0

Tolerance
cm³/1000 strokes : + 0.5

Check tolerance
cm³/1000S. : + 2.5

Spread

Tolerance
cm³/1000 strokes : 3.0

Check tolerance
cm³/1000S. : 4.5

Rated speed rpm : 325

Rack travel in mm : 7.00
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 10.5
 Tolerance cm³/1000 strokes : + - 1.5
 Check tolerance cm³/1000S. : + - 3.5
 Speed
 Tolerance cm³/1000 strokes : 2.5
 Check tolerance cm³/1000S. : 4.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + - 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1480
 Aneroid pressure hPa : -
 Del. quantity cm³/1000 strokes : 68.0
 Tolerance cm³/1000 strokes : + - 0.5
 Check tolerance cm³/1000S. : + - 2.5
 Speed
 Tolerance cm³/1000 strokes : 3.0
 Check tolerance cm³/1000S. : 4.5

CONTROL LEVER

control lever position degree : 108.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 8.00
 Rated speed rpm : 1525

Tolerance 1/min : + - 5
 rack travel mm : 4.00
 Rated speed rpm : 1560
 Tolerance 1/min : + - 15
 rack travel mm : 0.85
 Tolerance mm : + - 0.55
 Rated speed rpm : 1700
 rack travel mm : 4.00
 Rated speed rpm : 1575
 Tolerance 1/min : + - 15

LOW IDLE

control lever position degree : 70.0
 tolerance degree : + - 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 325
 rack travel mm : 7.50
 Tolerance mm : + - 0.10
 Rated speed rpm : 100
 CRT mm min. : > 19.50
 Testing:
 Rated speed rpm : 325
 rack travel mm : 7.00
 Tolerance mm : + - 0.10
 rack travel mm : 2.00
 Rated speed rpm : 480
 Tolerance 1/min : + - 30

Start interlock

Rated speed rpm : > 100
 Check speed 1/min : > 80

STARTING FUEL DELIVERY

Rated speed rpm : 100

rack travel mm : 20.25
Tolerance mm : +- 0.75
Del. quantity
cm³/1000 strokes : 118.0
Tolerance
cm³/1000 strokes : +- 8.0
Check tolerance
cm³/1000S. : +- 11.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : 7.00
Tolerance mm : +- 0.10
Del. quantity
cm³/1000 strokes : 10.5
Tolerance
cm³/1000 strokes : +- 1.5
Check tolerance
cm³/1000S. : +- 3.5
Spread
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 4.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 24.10.97
Test oil : ISO 4113

Combination No. : 0 400 866 219

Injection pump
Pump designation : PES6A95D120RS2860
EP type number : 0 410 896 889

Governor
Governor design. : RSV410...1050AOC2260
: -3R
Governor no. : 0 420 233 344

Cust. part No. : 32 82 684

Customer-spec. information

Customer : CUMMINS
Motor : 6 BT
Power KW : 113.0

TEST BENCH REQUIREMENTS

Inlet line : 1.3

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 2.15
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 11.50
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 10.90

Tolerance mm : + - 0.05
 Del. quantity cm³/1000 strokes : 97.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 8.0
 Rated speed rpm : 425
 Rack travel in mm : 6.95
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 16.8
 Tolerance cm³/1000 strokes : + - 2.0
 Check tolerance cm³/1000S. : + - 4.5
 Spread
 Tolerance cm³/1000 strokes : 5.5
 Check tolerance cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + - 0.20
 governor spring pre-tension click setting x : 1.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
 Aneroid pressure hPa : 1100
 Del. quantity cm³/1000 strokes : 97.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 8.0

CONTROL LEVER

control lever position degree : 90.0
 tolerance degree : + - 4.0
 RATED SPEED
 rack travel mm : 9.90
 Rated speed rpm : 1095
 Tolerance 1/min : + - 5
 rack travel mm : 4.00
 Rated speed rpm : 1140
 Tolerance 1/min : + - 15
 rack travel mm : 0.85
 Tolerance mm : + - 0.55
 Rated speed rpm : 1330
 rack travel mm : 4.00
 Rated speed rpm : 1175
 Tolerance 1/min : + - 15

LOW IDLE

control lever position degree : 70.0
 tolerance degree : + - 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 425
 rack travel mm : 5.95
 Tolerance mm : + - 0.10
 Rated speed rpm : 100
 CRT mm min. : > 19.50

Testing:

Rated speed rpm : 425
rack travel mm : 6.95
Tolerance mm : + - 0.10

rack travel mm : 2.00
Rated speed rpm : 590
Tolerance 1/min : + - 30

TORQUE CONTROL

Rated speed rpm : 1050
rack travel mm : 10.90
Tolerance mm : + - 0.05

Rated speed rpm : 450
rack travel mm : 11.80
Tolerance mm : + - 0.10

Rated speed rpm : 550
rack travel mm : 11.50
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 450
Pressure hPa : 1100
rack travel mm : 11.80
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 9.80
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 450
Pressure hPa : 420
rack travel mm : 10.10
Tolerance mm : + - 0.10

Pressure hPa : 730
rack travel mm : 10.95
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1100

Rated speed rpm : 450
Del. quantity cm³/1000 strokes : 98.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 3.0

Aneroid pressure

hPa : -
Rated speed rpm : 500
Del. quantity cm³/1000 strokes : 67.0
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 14.00
Tolerance mm : + - 0.20
Del. quantity cm³/1000 strokes : 115.0
Tolerance cm³/1000 strokes : + - 7.5
Check tolerance cm³/1000S. : + - 10.0

LOW IDLE

Rated speed rpm : 425
Rack travel in mm : 6.95
Tolerance mm : + - 0.10
Del. quantity cm³/1000 strokes : 16.8
Tolerance cm³/1000 strokes : + - 2.0
Check tolerance cm³/1000S. : + - 4.5
Spread
Tolerance cm³/1000 strokes : 5.5
Check tolerance cm³/1000S. : 9.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 30.10.97
Test oil : ISO 4113

Combination No. : 0 402 076 755

Injection pump
Pump designation : PES6P110A320LS3318
EP type number : 0 412 016 741

Governor
Governor design. : RSV350...750P4A561
Governor no. : 0 421 833 406

Cust. part No. : 1820271C92

Customer-spec. information
Customer : NAVISTAR
Motor : DTA-466
Power KW : 185.0

TEST BENCH REQUIREMENTS

Inlet line : 2.4

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 076

Inlet press. bar : 2.8
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + - 1.0

Prestroke mm : 3.00
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + - 0.50
Check
tolerance °NW : + - 0.75

Start of delivery blocking

Tolerance : + - 0.50
Check
tolerance °NW : + - 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 13.65
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 241.5

Tolerance
 cm³/1000 strokes : +- 1.0
 Check tolerance
 cm³/1000S. : +- 3.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 6.5

 Rated speed rpm : 350
 Rack travel in mm : 5.70
 Tolerance mm : +- 0.10
 Del. quantity
 cm³/1000 strokes : 40.0
 Tolerance
 cm³/1000 strokes : +- 2.0
 Check tolerance
 cm³/1000S. : +- 4.5
 Spred
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : +- 0.20
 governor spring
 pre-tension
 click setting x : 2.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
 Aneroid pressure
 hPa : -
 Del. quantity
 cm³/1000 strokes : 241.5

Tolerance
 cm³/1000 strokes : +- 1.0
 Check tolerance
 cm³/1000S. : +- 3.0
 Spred
 Tolerance
 cm³/1000 strokes : 4.0
 Check tolerance
 cm³/1000S. : 6.5

 CONTROL LEVER

control lever
 position degree : 94.0
 tolerance degree : +- 4.0
 RATED SPEED
 rack travel mm : 11.80
 Rated speed rpm : 755
 Tolerance 1/min : +- 5
 rack travel mm : 4.00
 Rated speed rpm : 795
 Tolerance 1/min : +- 5
 rack travel mm : 0.85
 Tolerance mm : +- 0.55
 Rated speed rpm : 900
 rack travel mm : 4.00
 Rated speed rpm : 800
 Tolerance 1/min : +- 5

LOW IDLE

control lever
 position degree : 74.0
 tolerance degree : +- 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 100
 CRT mm min. : > 19.00
 Testing:
 Rated speed rpm : 350
 rack travel mm : 5.70
 Tolerance mm : +- 0.10

 TORQUE CONTROL
 Rated speed rpm : 700

rack travel mm : 13.65
Tolerance mm : + 0.05

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + 20.0
Check tolerance
cm³/1000S. : + 25.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.70
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.5
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 31.10.97
Test oil : ISO 4113

Combination No. : 0 402 034 700AA

Injection pump
Pump designation : PES4P120B120RS3379
EP type number : 0 412 024 702

Governor
Governor design. : RQV4?5...1100PA1314K
Governor no. : 0 421 815 543

Cust. part No. : 3284266

Customer-spec. information

Customer : CDC
Motor : 4BTA-A
Power KW : 93.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0
Tolerance bar : +- 0.1

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : +- 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : +- 1.0

Prestroke mm : 3.60
Tolerance mm : +- 0.05
Check
tolerance mm : +- 0.10

Rack travel in mm : 10.50
Tolerance mm : +- 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 6.00
Tolerance : +- 0.50
Check
tolerance *NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1130

Rack travel in mm : 11.65
Tolerance mm : +- 0.05

Del. quantity
cm³/1000 strokes : 139.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rated speed rpm : 475

Rack travel in mm : 5.40
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 17.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 5.0

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1163
guide sleeve
travel mm : 7.66

Tolerance mm : + 0.15

Rated speed rpm : 475
guide sleeve
travel mm : 1.59

Tolerance mm : + 0.20

Rated speed rpm : 931
guide sleeve
travel mm : 5.89

Tolerance mm : + 0.25

Rated speed rpm : 670
guide sleeve
travel mm : 3.53

Tolerance mm : + 0.25

Rated speed rpm : 1660

guide sleeve
travel mm : 13.50
Tolerance mm : + 0.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1130
Aneroid pressure
hPa : 1200

Del. quantity
cm³/1000 strokes : 139.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 112.0

tolerance degree : + 4.0

RATED SPEED
rack travel mm : 10.70

Rated speed rpm : 1170

Tolerance 1/min : + 15

rack travel mm : 6.60

Rated speed rpm : 1245

Tolerance 1/min : + 5

rack travel mm : 0.50

Tolerance mm : + 0.50

Rated speed rpm : 1400

LOW IDLE

control lever
position degree : 71.0

tolerance degree : + 4.0

Control lever difference
Grad : 41.0

tolerance degree : + 6.0

Setting point w/out bumper spring

Rated speed rpm : 400

CRT mm min. : > 6.40

Testing:

Rated speed rpm : 475
rack travel mm : 5.40
Tolerance mm : + 0.10

Rated speed rpm : 550

TORQUE CONTROL

Rated speed rpm : 1130
rack travel mm : 11.65
Tolerance mm : + 0.05

Rated speed rpm : 750
rack travel mm : 11.50
Tolerance mm : + 0.20

Rated speed rpm : 600
rack travel mm : 11.20
Tolerance mm : + 0.20

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1200
rack travel mm : 10.90
Tolerance mm : + 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 9.40
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 600
rack travel mm : 10.40
Tolerance mm : + 0.20

Pressure hPa : 500
rack travel mm : 9.80
Tolerance mm : + 0.20

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 375

Check
speed 1/min : > 80
Check
speed 1/min : < 385

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 144.5
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 91.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 21.00
Tolerance mm : + 0.50
Del. quantity
cm³/1000 strokes : 169.0
Tolerance
cm³/1000 strokes : + 20.0
Check tolerance
cm³/1000S. : + 25.0

LOW IDLE

Rated speed rpm : 475
Rack travel in mm : 5.40
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 17.0

Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 5.0
Spred
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 30.10.97
Test oil : ISO 4113

Combination No. : 0 402 646 680

Injection pump
Pump designation : PE6P120A320RS7447
EP type number : 0 412 626 970

Governor
Governor design. : RQ275/1150PA1361
Governor no. : 0 421 801 825

Cust. part No. : 1329586

Customer-spec. information

Customer : DAF
Motor : GS 200-RQ
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 150
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 11.70
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.10
Check
tolerance °NW : + 0.70

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.70
Tolerance mm : + 0.05

Del. quantity cm³/1000 strokes : 178.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0
 Rated speed rpm : 275
 Rack travel in mm : 5.05
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 24.0
 Tolerance cm³/1000 strokes : + - 3.0
 Check tolerance cm³/1000S. : + - 6.0
 Spread
 Tolerance cm³/1000 strokes : 8.0
 Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1205
 guide sleeve travel mm : 6.49
 Tolerance mm : + - 0.15
 Rated speed rpm : 275
 guide sleeve travel mm : 1.97
 Tolerance mm : + - 0.20
 Rated speed rpm : 1150
 guide sleeve travel mm : 6.00
 Tolerance mm : + - 0.10
 Rated speed rpm : 356

guide sleeve travel mm : 4.47
 Tolerance mm : + - 0.10
 Rated speed rpm : 440
 guide sleeve travel mm : 6.00
 Tolerance mm : + - 0.10
 Rated speed rpm : 1360
 guide sleeve travel mm : 11.50
 Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600
 Rack travel in mm : 16.00
 Tolerance mm : + - 0.40

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 178.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever position degree : 99.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 10.70
 Rated speed rpm : 1202
 Tolerance 1/min : + - 8

rack travel mm : 4.00
 Rated speed rpm : 1280
 Tolerance 1/min : + - 15

rack travel mm : 0.70
 Tolerance mm : + - 0.70
 Rated speed rpm : 1450

LOW IDLE

control lever
position degree : 73.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 175

CRT mm/min. : > 6.40

Testing:

Rated speed rpm : 275
rack travel mm : 5.05
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 355
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1000
rack travel mm : 11.70
Tolerance mm : + 0.05

Rated speed rpm : 1150
rack travel mm : 11.70
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 600
Pressure hPa : 1000
rack travel mm : 11.70
Tolerance mm : + 0.05

Rated speed rpm : 600
Pressure hPa : -
rack travel mm : 6.70
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 600

Pressure hPa : 220
rack travel mm : 10.50

Tolerance mm : + 0.05
Pressure hPa : 100
rack travel mm : 8.10
Tolerance mm : + 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 101.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

LOW IDLE

Rated speed rpm : 275
Rack travel in mm : 5.05
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.10.97
Test oil : ISO 4113

Combination No. : 0 402 678 840

Injection pump
Pump designation : PE8P120A720LS7446
EP type number : 0 412 628 931

Governor
Governor design. : RSV350...1100P8A652
: -1
Governor no. : 0 421 833 570

Cust. part No. : 1411028

Customer-spec. information
Customer : SCANIA
Motor : DSI1468M

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Vibration
damper
(RoBo diaphragm) : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 4.45
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 1.50

Firing order : 1- 2- 7- 3- 4-
: 5- 6- 8

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + - 0.30
Check
tolerance °NW : + - 0.75

Start of delivery mark

Tolerance : + - 0.10
Check
tolerance °NW : + - 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 14.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 279.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rated speed rpm : 350

Rack travel in mm : 5.80
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 42.0
Tolerance

cm³/1000 strokes : + 3.0
Check tolerance

cm³/1000S. : + 6.0
Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3

governor spring
pre-tension
click setting x : 6.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 279.0
Tolerance

cm³/1000 strokes : + 1.0
Check tolerance

cm³/1000S. : + 4.0
Spred

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 108.0
tolerance degree : + 4.0

RATED SPEED

rack travel mm : 13.15
Rated speed rpm : 1145

Tolerance 1/min : + 5
Check

speed 1/min : + 10
rack travel mm : 4.00

Rated speed rpm : 1235
Tolerance 1/min : + 15

Check
speed 1/min : + 20
rack travel mm : 0.85

Tolerance mm : + 0.55
Rated speed rpm : 1400

rack travel mm : 4.00
Rated speed rpm : 1265

Tolerance 1/min : + 15
Check

speed 1/min : + 20
LOW IDLE

LOW IDLE

control lever
position degree : 76.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 350
rack travel mm : 5.30

Tolerance mm : + - 0.10

Testing:

Rated speed rpm : 350
rack travel mm : 5.80
Tolerance mm : + - 0.10

TORQUE CONTROL

Rated speed rpm : 700
rack travel mm : 14.15
Tolerance mm : + - 0.05

Rated speed rpm : 1100
rack travel mm : 14.15
Tolerance mm : + - 0.10

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 14.15
Tolerance mm : + - 0.05

Rated speed rpm : 500
Pressure hPa : -
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 360
rack travel mm : 9.70
Tolerance mm : + - 0.20

Pressure hPa : 840
rack travel mm : 12.45
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 1100
Del. quantity
cm³/1000 strokes : 241.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure

hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 173.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.80
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 42.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 04.11.97

Test oil : ISO 4113

Combination No. : 0 402 796 041

Injection pump

Pump designation : PES6H110/320RS19
EP type number : 0 412 716 006

Governor

Governer design. : RE36
Governer no. : 0 421 890 374

Cust. part No. : 8192870 P04 v.07/97

Customer-spec. information

Customer : VOLVO-TRUCK
Motor : D7C
Power KW : 228.0

TEST BENCH REQUIREMENTS

Inlet Line : 4(EHAB)

Test oil inlet
temp. °C : 40
Tolerance °C : + - 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0
Tolerance bar : + - 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + - 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

Pump-specific values
in Section (B)
must be observed!

(A) INJECTION PUMP SETTINGS
No basic setting.
Setting of constant delivery
under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 8.00
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 0.50

Firing order : 1- 5- 3- 6- 2
: - 4

Phasing : 0-60-120-180-240
: -30°
Tolerance : + - 0.30
Check
tolerance °NW : + - 0.75

(B) POSITIONER TESTING

Warm-up time: 3 minutes at
n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1: 0

Setting point
(P, R and H pump)

Uact V : 3.100
 CRT mm : 13.00
 Tolerance mm : +/- 0.05
 Check tolerance mm : +/- 0.10

Check value
(P, R and H pump)

Uact V : 1.700
 CRT mm : 6.15
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.30

Setting point
(M pump)

Uact V : 3.100
 CRT mm : 12.50
 Tolerance mm : +/- 0.05
 Check tolerance mm : +/- 0.10

Check value
(M pump)

Uact V : 1.700
 CRT mm : 5.50
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.30

Stop position
(P, R and H pump)

Uact V : Value with
deenergised adjusting magnet
and control rod in
stop position.
 CRT mm : 0.75
 Tolerance mm : +/- 0.25
 Check tolerance mm : +/- 0.35

Stop position
(M pump)

Uact V : 0,720
 Tolerance Volt : +/- 0,065
 CRT mm : 1,00

Starting position
(M pump)

Uact V : 4,500
 Tolerance Volt : +/- 0,115
 CRT mm : 19,00
 Tolerance mm : +/- 0,80

ENGINE-SPEED SENSOR
(All P and R pumps not
H and M pumps)

Test with control rod
in stop position

Engine speed min-1: 60
 Amplitude V : 1.4
 Tolerance V : +/- 0.6
 Check tolerance V : +/- 1.20

Engine speed min-1: 600
 Difference
 Amplitude to
 Amplitude V : max.1.4

(C) INJECTION PUMP WITH POSITIONER

TEST POINT V1

Rated speed rpm : 660
 Uact V : 3.000
 Prestroke solenoid
 Stroke mm : 5.30
 Del. quantity
 cm³/1000 strokes : 359.0
 Tolerance
 cm³/1000 strokes : +/- 1.0
 Check tolerance
 cm³/1000S. : +/- 5.0
 Spread
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 11.0
 FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 950

TEST POINT L1

Rated speed rpm : 300
 Uact V : 1.570
 Tolerance Volt : +/- 0.060
 Check tolerance
 Volt : +/- 0.060
 Prestroke solenoid
 Stroke mm : 5.30
 Del. quantity
 cm³/1000 strokes : 20.0
 Tolerance
 cm³/1000 strokes : +/- 2.0
 Spread

Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 03.11.97
Test oil : ISO 4113

Combination No. : 0 402 946 030

Injection pump
Pump designation : PES6P120A720RS8049
EP type number : 0 412 926 031

Governor
Governor design. : RQ750PA1299
Governor no. : 0 421 801 810

Cust. part No. : 1397781

Customer-spec. information
Customer : SCANIA
Motor : DSC1158A

TEST BENCH REQUIREMENTS

Inlet line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 14.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.30
Check
tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 13.15
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 363.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 11.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

Rack travel in mm : 3.10
Tolerance mm : + - 0.20

Del. quantity
cm³/1000 strokes : 30.0

Tolerance
cm³/1000 strokes : + - 4.0

Check tolerance
cm³/1000S. : + - 6.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700

Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 363.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 11.0

Spread

Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

CONTROL LEVER

control lever
position degree : 22.0
tolerance degree : + - 4.0

control lever
position degree : 83.0
tolerance degree : + - 4.0

ASSEMBLY GOVERNOR SETTING

Rated speed rpm : 750
rack travel mm : 12.10

Rated speed rpm : 778
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 850

Rated speed rpm : 751
rack travel mm : 12.10

Rated speed rpm : 779
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 850

Rated speed rpm : 752
rack travel mm : 12.10

Rated speed rpm : 780
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 850

Rated speed rpm : 753
rack travel mm : 12.10

Rated speed rpm : 781
Tolerance 1/min : + - 4
rack travel mm : 4.00

rack travel mm : 0.50

Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 754
rack travel mm : 12.10

Rated speed rpm : 782
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

Rated speed rpm : 755
rack travel mm : 12.10

Rated speed rpm : 783
Tolerance 1/min : + 4
rack travel mm : 4.00

rack travel mm : 0.50
Tolerance mm : + 0.50
Rated speed rpm : 850

TORQUE CONTROL
Rated speed rpm : 700
rack travel mm : 13.15
Tolerance mm : + 0.05

**ANEROID/ALTITUDE
COMPENSATOR TEST**

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.15
Tolerance mm : + 0.05

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 7.80
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 230
rack travel mm : 8.45
Tolerance mm : + 0.25

Pressure hPa : 580

rack travel mm : 10.45
Tolerance mm : + 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 7.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Tolerance mm : + 0.20

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 04.11.97
Test oil : ISO 4113

Combination No. : 0 403 474 021

Injection pump
Pump designation : PES4MW100/720RS1181
EP type number : 0 413 404 107

Governor
Governor design. : RSV400...1000MW1A348
Governor no. : 0 420 085 183

Cust. part No. : 9880882

Customer-spec. information

Customer : LIEBHERR
Motor : D924T-E A2
Power KW : 120.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + - 1.0

Prestroke mm : 3.05
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + - 0.50
Check
tolerance °NW : + - 0.75

BASIC SETTING

Rated speed rpm : 890

Rack travel in mm : 13.20
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 177.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000s. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 4.0

Check tolerance cm³/1000s. : 7.5

Rated speed rpm : 550

Rack travel in mm : 4.50

Tolerance mm : + 0.20

Del. quantity cm³/1000 strokes : 25.0

Tolerance cm³/1000 strokes : + 2.0

Check tolerance cm³/1000s. : + 4.5

Spread Tolerance cm³/1000 strokes : 3.5

Check tolerance cm³/1000s. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever

position degree : - 3

Rated speed rpm : 800

Rack travel in mm : 0.65

Tolerance mm : + 0.35

governor spring

pre-tension

click setting x : 3.75

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 890

Aneroid pressure

hPa : 1250

Del. quantity cm³/1000 strokes : 177.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000s. : + 4.0

Spread Tolerance

cm³/1000 strokes : 4.0

Check tolerance cm³/1000s. : 7.5

CONTROL LEVER

control lever position degree : 96.0

Tolerance degree : + 4.0

RATED SPEED

rack travel mm : 12.20

Rated speed rpm : 920

Tolerance 1/min : + 5

rack travel mm : 4.00

Rated speed rpm : 980

Tolerance 1/min : + 10

rack travel mm : 1.00

Tolerance mm : + 0.70

Rated speed rpm : 1100

rack travel mm : 4.00

Rated speed rpm : 990

Tolerance 1/min : + 10

LOW IDLE

control lever

position degree : 78.0

Tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 550

rack travel mm : 4.10

Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 550

rack travel mm : 4.50

Tolerance mm : + 0.20

TORQUE CONTROL

Rated speed rpm : 890

rack travel mm : 13.20

Tolerance mm : + 0.05

Rated speed rpm : 500

rack travel mm : 13.20

Tolerance mm : + 0.10

Rated speed rpm : 600
rack travel mm : 13.20
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 1250
rack travel mm : 13.20
Tolerance mm : + - 0.05

Rated speed rpm : 550
Pressure hPa : -
rack travel mm : 11.50
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 550

Pressure hPa : 560
rack travel mm : 11.90
Tolerance mm : + - 0.05

Pressure hPa : 650
rack travel mm : 12.80
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1250
Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 178.0
Tolerance
cm3/1000 strokes : + - 2.0
Check tolerance
cm3/1000S. : + - 5.0
Spread
Tolerance
cm3/1000 strokes : 6.0
Check tolerance
cm3/1000S. : 9.0

Aneroid pressure
hPa : 1250
Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 180.0

Tolerance
cm3/1000 strokes : + - 2.0
Check tolerance
cm3/1000S. : + - 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 149.0
Tolerance
cm3/1000 strokes : + - 1.0
Check tolerance
cm3/1000S. : + - 4.0

STARTING FUEL DELIVERY

ESS test: With 24 V solenoid activated,
rack must reach start position in max.
control lever setting.

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + - 1.00
Del. quantity
cm3/1000 strokes : 135.0
Tolerance
cm3/1000 strokes : + - 5.0
Check tolerance
cm3/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 550

Rack travel in mm : 4.50
Tolerance mm : + - 0.20
Del. quantity
cm3/1000 strokes : 25.0
Tolerance
cm3/1000 strokes : + - 2.0
Check tolerance
cm3/1000S. : + - 4.5
Spread
Tolerance
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 04.11.97
Test oil : ISO 4113

Combination No. : 0 403 476 126

Injection pump
Pump designation : PES6MW100/320RS1132
EP type number : 0 413 406 124

Governor
Governor design. : RSV300...1050MW4A352
Governor no. : 0 420 085 201

Cust. part No. :

Customer-spec. information

Customer : VME
Motor : TD 61
Power KW : 122.0

TEST BENCH REQUIREMENTS

Inlet line : 1.3

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 457 413 010

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 2.95
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 93.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spred

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 300

Rack travel in mm : 6.10
Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 14.0

Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000S. : + 4.5

Spred

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.65
Tolerance mm : + 0.35

governor spring
pre-tension
click setting x : 4.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 93.0
Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spred
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 6.0

CONTROL LEVER

control lever
position degree : 120.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 10.10
Rated speed rpm : 1075
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 1125
Tolerance 1/min : + 15

rack travel mm : 1.00
Tolerance mm : + 0.70
Rated speed rpm : 1250

rack travel mm : 4.00
Rated speed rpm : 1135
Tolerance 1/min : + 15

LOW IDLE

control lever
position degree : 80.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 300
rack travel mm : 5.60
Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 300
rack travel mm : 6.10
Tolerance mm : + 0.10

TORQUE CONTROL
Rated speed rpm : 1000
rack travel mm : 11.15
Tolerance mm : + - 0.05

**ANEROID/ALTITUDE
COMPENSATOR TEST**

SETTING

Rated speed rpm : 1000
Pressure hPa : 1000
rack travel mm : 11.15
Tolerance mm : + - 0.05

Rated speed rpm : 1000
Pressure hPa : -
rack travel mm : 10.05
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 1000

Pressure hPa : 160
rack travel mm : 10.80
Tolerance mm : + - 0.10

Pressure hPa : 100
rack travel mm : 10.35
Tolerance mm : + - 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 78.0
Tolerance
cm3/1000 strokes : + - 1.0
Check tolerance
cm3/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 105.0
Tolerance
cm3/1000 strokes : + - 5.0

Check tolerance
cm3/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.10
Tolerance mm : + - 0.10
Del. quantity
cm3/1000 strokes : 14.0
Tolerance
cm3/1000 strokes : + - 2.0
Check tolerance
cm3/1000S. : + - 4.5
Spread
Tolerance
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 29.01.97
Test oil : ISO 4113

Combination No. : 9 400 087 498

Injection pump
Pump designation : PES6P120A120RS3344
EP type number : 9 400 087 090

Governor
Governor design. : RQV350...1100PA1216
Governor no. : 9 420 080 380

Cust. part No. : 3355978

Customer-spec. information

Customer : CUMMINS
Motor : 6 CTAA - 250
Power KW : 184.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 076

Inlet press. bar : 3.0

Test nozzle holder
assembly : 1 688 901 019

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 4.15
Tolerance mm : + - 0.05
Check tolerance mm : + - 0.10

Rack travel in mm : 15.50
Tolerance mm : + - 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Tolerance : + - 0.50
Check tolerance °NW : + - 0.75

Start of delivery blocking

°NW after s.o.d. : 7.50
Tolerance : + - 0.10
Check tolerance °NW : + - 0.23

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 14.55
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 184.5

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : 6.40
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 44.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000S. : + - 6.0

Spread
Tolerance
cm³/1000 strokes : 8.0

Check tolerance
cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 650
guide sleeve
travel mm : 5.55

Tolerance mm : + - 0.25

Rated speed rpm : 1150
guide sleeve
travel mm : 8.40

Tolerance mm : + - 0.10

Rated speed rpm : 350
guide sleeve
travel mm : 1.55

Tolerance mm : + - 0.25

Rated speed rpm : 500
guide sleeve
travel mm : 4.05

Tolerance mm : + - 0.25

Rated speed rpm : 1400

guide sleeve
travel mm : 10.55

Tolerance mm : + - 0.25

GUIDE SLEEVE POSITION

control lever
position degree : - 1
Rated speed rpm : 1150

Rack travel in mm : 16.50
Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 184.5

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 4.0

Spread
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 63.0
tolerance degree : + - 4.0

control lever
position degree : 117.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 13.50
Rated speed rpm : 1155
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1350
Tolerance 1/min : + - 15

rack travel mm : 0.50
Tolerance mm : + - 0.50
Rated speed rpm : 1500

LOW IDLE

control lever
position degree : 69.0
tolerance degree : \pm 4.0

control lever
position degree : 14.0
tolerance degree : \pm 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 9.50

Testing:

Rated speed rpm : 325
rack travel mm : 6.40
Tolerance mm : \pm 0.10

Rated speed rpm : 375

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 14.55
Tolerance mm : \pm 0.05

Rated speed rpm : 700
rack travel mm : 14.55
Tolerance mm : \pm 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1000
rack travel mm : 14.55
Tolerance mm : \pm 0.05

Rated speed rpm : 500
Pressure hPa : -

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 680
rack travel mm : 0.85

Tolerance mm : \pm 0.15
Pressure hPa : 530
rack travel mm : 0.30
Tolerance mm : \pm 0.10

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 255

Check speed 1/min : > 80
Check speed 1/min : < 275

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 184.0
Tolerance
cm³/1000 strokes : \pm 2.0
Check tolerance
cm³/1000S. : \pm 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 144.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : \pm 1.00
Del. quantity
cm³/1000 strokes : 190.0
Tolerance
cm³/1000 strokes : \pm 10.0
Check tolerance
cm³/1000S. : \pm 14.0

LOW IDLE

Rated speed rpm : 325
Rack travel in mm : 6.40
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 44.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 0 402 076 777

Injection pump
Pump designation : PES6P120A720RS3352
EP type number : 0 412 026 780

Governor
Governor design. : RSV400...1100P2A599
Governor no. : 0 421 833 478

Cust. part No. : RE62647

Customer-spec. information

Customer : DEERE
Motor : 6081HN002
Power KW : 200.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 457 413 010

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : 9.25
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference
and maximum rack
travel : 14.00
Difference ° CS : 2.50

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 12.40
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 159.5

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 6.5

Rated speed rpm : 400

Rack travel in mm : 5.20
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 4.5

Spread
Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3
Rated speed rpm : 800

Rack travel in mm : 0.50
Tolerance mm : + - 0.20

governor spring
pre-tension
click setting x : 3.50

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100
Aneroid pressure
hPa : 1500

Del. quantity
cm³/1000 strokes : 159.5

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance
cm³/1000S. : + - 3.0

Spread
Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 6.5

CONTROL LEVER

control lever
position degree : 94.0
tolerance degree : + - 4.0

RATED SPEED
rack travel mm : 11.40
Rated speed rpm : 1150
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1215
Tolerance 1/min : + - 5

rack travel mm : 0.85
Tolerance mm : + - 0.55
Rated speed rpm : 1350

rack travel mm : 4.00
Rated speed rpm : 1215
Tolerance 1/min : + - 15

LOW IDLE

control lever
position degree : 70.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 400

rack travel mm : 4.70
Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm/min. : > 19.00

Testing:

Rated speed rpm : 400
rack travel mm : 5.20
Tolerance mm : + 0.10

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 12.40
Tolerance mm : + 0.05

Rated speed rpm : 650
rack travel mm : 13.50
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500

Rated speed rpm : 800
Pressure hPa : -
rack travel mm : 10.10
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 920
rack travel mm : 12.70
Tolerance mm : + 0.20

Pressure hPa : 490
rack travel mm : 11.10
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 100

Check speed 1/min : > 80

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 650
Del. quantity
cm³/1000 strokes : 191.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.0

Aneroid pressure
hPa : -
Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 104.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm³/1000 strokes : 105.0
Tolerance
cm³/1000 strokes : + 20.0
Check tolerance
cm³/1000S. : + 25.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 5.20
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : + 2.0
Check tolerance
cm³/1000S. : + 4.5
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 0 402 076 780

Injection pump
Pump designation : PES6P120A720RS3352
EP type number : 0 412 026 780

Governor
Governor design. : RSV400...900P4A606
Governor no. : 0 421 833 490

Cust. part No. : RE62644

Customer-spec. information

Customer : DEERE
Motor : 6081AF001
Power KW : 150.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 457 413 010

Inlet press. bar : 2.0

Test nozzle holder
assembly : 1 688 901 103

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300

Start of delivery mark

°NW after s.o.d. : 7.00
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference
and maximum rack
travel : 14.00
Difference ° CS : 2.50

BASIC SETTING

Rated speed rpm : 800

Rack travel in mm : 13.90
 Tolerance mm : + 0.05
 Del. quantity cm³/1000 strokes : 219.5
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 3.0
 Spread
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 6.5

Rated speed rpm : 400
 Rack travel in mm : 5.65
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 25.5
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 5.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + 0.20
 governor spring
 pre-tension
 click setting x : 4.75

FULL LOAD DELIVERY AT FULL LOAD STOP
 Rated speed rpm : 800
 Aneroid pressure hPa : -
 Del. quantity cm³/1000 strokes : 219.5
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 3.0
 Spread
 Tolerance cm³/1000 strokes : 4.0
 Check tolerance cm³/1000S. : 6.5

CONTROL LEVER

control lever
 position degree : 100.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 12.90
 Rated speed rpm : 910
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 950
 Tolerance 1/min : + 5
 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1020
 rack travel mm : 4.00
 Rated speed rpm : 970
 Tolerance 1/min : + 15

LOW IDLE

control lever
 position degree : 77.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 400
 rack travel mm : 5.15
 Tolerance mm : + 0.10

Rated speed rpm : 100
CRT mm/min. : > 19.00

Testing:

Rated speed rpm : 400
rack travel mm : 5.65
Tolerance mm : + 0.10

TORQUE CONTROL

Rated speed rpm : 800
rack travel mm : 13.90
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 100
Check speed 1/min : > 80

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity cm³/1000 strokes : 105.0
Tolerance cm³/1000 strokes : + 20.0
Check tolerance cm³/1000S. : + 25.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 5.65
Tolerance mm : + 0.10
Del. quantity cm³/1000 strokes : 25.5
Tolerance cm³/1000 strokes : + 3.0
Check tolerance cm³/1000S. : + 5.0
Spread
Tolerance cm³/1000 strokes : 6.0
Check tolerance cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 9 400 030 720

Injection pump
Pump designation : PES6A95D320/3RS2895
EP type number : 9 410 037 238

Governor
Governor design. : RSV475...1250A0C833R
Governor no. : 9 420 034 703

Cust. part No. : 3928595

Customer-spec. information

Customer : CDC
Motor : 6BT
Power KW : 130.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : +- 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : +- 1.0

Prestroke mm : 2.70
Tolerance mm : +- 0.05
Check tolerance mm : +- 0.10

Rack travel in mm : 10.50
Tolerance mm : +- 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Start of delivery blocking

°NW after s.o.d. : 9.00
Tolerance : +- 0.50
Check tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1250

Rack travel in mm : 12.75

Tolerance mm : + - 0.05
 Del. quantity cm³/1000 strokes : 108.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 6.0

 Rated speed rpm : 475
 Rack travel in mm : 5.50
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 17.5
 Tolerance cm³/1000 strokes : + - 2.0
 Check tolerance cm³/1000S. : + - 4.5
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800

Rack travel in mm : 0.50
 Tolerance mm : + - 0.20

governor spring
 pre-tension
 click setting x : 5.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
 Aneroid pressure hPa : 900
 Del. quantity cm³/1000 strokes : 108.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 112.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 11.70
 Rated speed rpm : 1325
 Tolerance 1/min : + - 5

rack travel mm : 5.50
 Rated speed rpm : 1395
 Tolerance 1/min : + - 5

rack travel mm : 0.85
 Tolerance mm : + - 0.55
 Rated speed rpm : 1480

rack travel mm : 5.50
 Rated speed rpm : 1395
 Tolerance 1/min : + - 15

LOW IDLE

control lever
 position degree : 85.0
 tolerance degree : + - 4.0

Control lever difference
 Grad : 27.0
 tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 475
 rack travel mm : 5.00
 Tolerance mm : + - 0.10

Rated speed rpm : 100
CRT mm min. : > 19.00

Testing:

Rated speed rpm : 475
rack travel mm : 5.50
Tolerance mm : + 0.10

TORQUE CONTROL
Rated speed rpm : 1250
rack travel mm : 12.75
Tolerance mm : + 0.05

ANEROID/ALTITUDE
COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 900

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.70
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 480
rack travel mm : 12.20
Tolerance mm : + 0.20

Pressure hPa : 350
rack travel mm : 11.70
Tolerance mm : + 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 72.5
Tolerance
cm3/1000 strokes : + 1.0
Check tolerance
cm3/1000S. : + 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm3/1000 strokes : 120.5
Tolerance
cm3/1000 strokes : + 10.0
Check tolerance
cm3/1000S. : + 15.0

LOW IDLE

Rated speed rpm : 475

Rack travel in mm : 5.50
Tolerance mm : + 0.10
Del. quantity
cm3/1000 strokes : 17.5
Tolerance
cm3/1000 strokes : + 2.0
Check tolerance
cm3/1000S. : + 4.5
Spread
Tolerance
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 9 400 030 734

Injection pump
Pump designation : PES4A95D320/3RS2880
EP type number : 9 410 037 214

Governor
Governor design. : RSV500...1100A0C847R
Governor no. : 9 420 034 713

Cust. part No. : 3930153

Customer-spec. information

Customer : CDC
Motor : 4BT3.9
Power KW : 74.5

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : + 1.0

Prestroke mm : 2.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Start of delivery blocking

*NW after s.o.d. : 7.50
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 12.75
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 109.5

Tolerance
 cm³/1000 strokes : + 1.0

 Check tolerance
 cm³/1000S. : + 3.0

 Spreed

 Tolerance
 cm³/1000 strokes : 3.5

 Check tolerance
 cm³/1000S. : 6.0

 Rated speed rpm : 500

 Rack travel in mm : 5.65
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 20.5
 Tolerance
 cm³/1000 strokes : + 2.0
 Check tolerance
 cm³/1000S. : + 4.5
 Spreed

 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800

 Rack travel in mm : 0.50
 Tolerance mm : + 0.20

governor spring
 pre-tension
 click setting x : 3.25

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 109.5

Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 3.0
 Spreed

 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 101.0
 tolerance degree : + 4.0

 RATED SPEED
 rack travel mm : 11.70
 Rated speed rpm : 1165
 Tolerance 1/min : + 5

 rack travel mm : 6.00
 Rated speed rpm : 1230
 Tolerance 1/min : + 5

 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1375

LOW IDLE

control lever
 position degree : 81.0
 tolerance degree : + 4.0

 Control lever difference
 Grad : 20.0
 tolerance degree : + 4.0

 Setting point w/out bumper spring

Rated speed rpm : 500
 rack travel mm : 5.15
 Tolerance mm : + 0.10

 Rated speed rpm : 100
 CRT mm min. : > 19.00

Testing:

Rated speed rpm : 500
 rack travel mm : 5.65
 Tolerance mm : + 0.10

TORQUE CONTROL
Rated speed rpm : 1100
rack travel mm : 12.75
Tolerance mm : + - 0.05

Rated speed rpm : 750
rack travel mm : 13.70
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 750
Pressure hPa : 1000

Rated speed rpm : 750
Pressure hPa : -
rack travel mm : 12.75
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 750

Pressure hPa : 650
rack travel mm : 13.50
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1000
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 123.5
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.0

Aneroid pressure
hPa : -
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 110.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 122.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 15.0

LOW IDLE

Rated speed rpm : 500

Rack travel in mm : 5.65
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 20.5
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 9 400 030 734GA

Injection pump
Pump designation : PES4A95D320/3RS2880
EP type number : 9 410 037 214

Governor
Governor design. : RSV500...1100A0C847R
Governor no. : 9 420 034 713

Cust. part No. : 3933290

Customer-spec. information

Customer : CDC
Motor : 4BT3.9
Power KW : 74.5

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet
temp. °C : 40
Tolerance °C : +- 2.0

Overflow valve : 1 417 413 093

Inlet press. bar : 2.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : +- 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 17.0
Tolerance bar : +- 1.0

Prestroke mm : 2.45
Tolerance mm : +- 0.05
Check
tolerance mm : +- 0.10

Rack travel in mm : 10.50
Tolerance mm : +- 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : +- 0.50
Check
tolerance °NW : +- 0.75

Start of delivery blocking

°NW after s.o.d. : 7.50
Tolerance : +- 0.50
Check
tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 12.75
Tolerance mm : +- 0.05

Del. quantity
cm³/1000 strokes : 109.5

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spreed

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 500

Rack travel in mm : 5.65

Tolerance mm : + 0.10

Del. quantity
cm³/1000 strokes : 20.5

Tolerance
cm³/1000 strokes : + 2.0

Check tolerance
cm³/1000S. : + 4.5

Spreed

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3

Rated speed rpm : 800

Rack travel in mm : 0.50

Tolerance mm : + 0.20

governor spring
pre-tension
click setting x : 5.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1100

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 109.5

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spreed

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

CONTROL LEVER

control lever
position degree : 101.0

tolerance degree : + 4.0

RATED SPEED

rack travel mm : 11.70

Rated speed rpm : 1165

Tolerance 1/min : + 5

rack travel mm : 6.00

Rated speed rpm : 1230

Tolerance 1/min : + 5

rack travel mm : 0.85

Tolerance mm : + 0.55

Rated speed rpm : 1375

rack travel mm : 6.00

Rated speed rpm : 1230

Tolerance 1/min : + 15

LOW IDLE

control lever
position degree : 81.0

tolerance degree : + 4.0

Control lever difference

Grad : 20.0

tolerance degree : + 6.0

Setting point w/out bumper spring

Rated speed rpm : 500

rack travel mm : 5.15

Tolerance mm : + 0.10

Rated speed rpm : 100

CRT mm min. : > 19.00

Testing:

Rated speed rpm : 500
rack travel mm : 5.65
Tolerance mm : + - 0.10

TORQUE CONTROL

Rated speed rpm : 1100
rack travel mm : 12.75
Tolerance mm : + - 0.05

Rated speed rpm : 750
rack travel mm : 13.70
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 750
Pressure hPa : 1000

Rated speed rpm : 750
Pressure hPa : -
rack travel mm : 11.90
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 750
Pressure hPa : 440
rack travel mm : 12.40
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1000
Rated speed rpm : 750
Del. quantity cm³/1000 strokes : 123.5
Tolerance cm³/1000 strokes : + - 2.0
Check tolerance cm³/1000S. : + - 4.0

Aneroid pressure hPa : -

Rated speed rpm : 750
Del. quantity cm³/1000 strokes : 96.5
Tolerance cm³/1000 strokes : + - 1.0
Check tolerance cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity cm³/1000 strokes : 122.0
Tolerance cm³/1000 strokes : + - 10.0
Check tolerance cm³/1000S. : + - 15.0

LOW IDLE

Rated speed rpm : 500
Rack travel in mm : 5.65
Tolerance mm : + - 0.10
Del. quantity cm³/1000 strokes : 20.5
Tolerance cm³/1000 strokes : + - 2.0
Check tolerance cm³/1000S. : + - 4.5
Spread Tolerance cm³/1000 strokes : 3.5
Check tolerance cm³/1000S. : 5.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.11.97
Test oil : ISO 4113

Combination No. : 0 402 074 700A

Injection pump
Pump designation : PES4P110B720RS3383
EP type number : 0 412 014 701

Governor
Governor design. : RSV300...1100P1A667
Governor no. : 0 421 833 582

Cust. part No. : 9880216

Customer-spec. information
Customer : LIEBHERR
Motor : D 924 TI-E A2
Power KW : 149.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + - 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5
Tolerance bar : + - 0.1

Tolerance l/h : + - 10.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 207.0
Tolerance bar : + - 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0
x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 3.20
Tolerance mm : + - 0.05
Check
tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 1.50

Firing order : 4- 2- 1- 3

Phasing : 0-90-180-270
Tolerance : + - 0.50
Check
tolerance °NW : + - 0.75

Start of delivery mark

Tolerance : + - 0.10
Check
tolerance °NW : + - 0.75

Barrel no. : 4

BASIC SETTING

Rated speed rpm : 880

Rack travel in mm : 13.85
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 203.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.5

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 500

Rack travel in mm : 4.60
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 5.5
Spred
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 7.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3

governor spring
pre-tension
click setting x : 5.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 880
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 203.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 3.5

Spred
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 94.0
tolerance degree : + 4.0

RATED SPEED
rack travel mm : 12.85
Rated speed rpm : 920
Tolerance 1/min : + 5

rack travel mm : 4.00
Rated speed rpm : 990
Tolerance 1/min : + 15

rack travel mm : 0.85
Tolerance mm : + 0.55
Rated speed rpm : 1200

rack travel mm : 4.00
Rated speed rpm : 1000
Tolerance 1/min : + 15

LOW IDLE

control lever
position degree : 83.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 500
rack travel mm : 2.80
Tolerance mm : + 0.10

Testing:

Rated speed rpm : 500
rack travel mm : 4.60
Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 595
Tolerance 1/min : + 50

TORQUE CONTROL

Rated speed rpm : 880

rack travel mm : 13.85
Tolerance mm : + - 0.05

Rated speed rpm : 500
rack travel mm : 13.90
Tolerance mm : + - 0.10

Rated speed rpm : 700
rack travel mm : 13.90
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.85
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 11.25
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 830
rack travel mm : 13.20
Tolerance mm : + - 0.05

Pressure hPa : 750
rack travel mm : 11.90
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 230.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1500
Rated speed rpm : 700

Del. quantity
cm³/1000 strokes : 216.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 170.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 500
Rack travel in mm : 4.60
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 5.5
Spread
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 7.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 19.09.97
Test oil : ISO 4113

Combination No. : 0 402 074 700C

Injection pump
Pump designation : PES4P110B720RS3383
EP type number : 0 412 014 701

Governor
Governor design. : RSV300...1100F1A667
Governor no. : 0 421 833 582

Cust. part No. : 9882855

Customer-spec. information
Customer : LIEBHERR
Motor : D 924 TI-E A2
Power KW : 137.0

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 207.0
Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.20
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 12.00
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 172.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.5

Spred

Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 400

Rack travel in mm : 4.00
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 20.0

Tolerance
cm³/1000 strokes : + 3.0

Check tolerance
cm³/1000S. : + 5.5

Spred

Tolerance
cm³/1000 strokes : 4.5

Check tolerance
cm³/1000S. : 7.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
position degree : - 3

governor spring
pre-tension
click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000
Aneroid pressure

hPa : 1370
Del. quantity

cm³/1000 strokes : 172.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.5

Spred
Tolerance
cm³/1000 strokes : 4.0

Check tolerance
cm³/1000S. : 7.5

CONTROL LEVER

control lever
position degree : 103.0
tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 11.00
Rated speed rpm : 1030
Tolerance 1/min : + - 5

rack travel mm : 4.00
Rated speed rpm : 1090
Tolerance 1/min : + - 10

rack travel mm : 4.00
Rated speed rpm : 1095
Tolerance 1/min : + - 10

LOW IDLE

control lever
position degree : 78.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 400
rack travel mm : 3.80
Tolerance mm : + - 0.10

Testing:

Rated speed rpm : 400
rack travel mm : 4.00
Tolerance mm : + - 0.10

TORQUE CONTROL
Rated speed rpm : 1000
rack travel mm : 12.00
Tolerance mm : + - 0.05

Rated speed rpm : 500
rack travel mm : 12.00
Tolerance mm : + - 0.10

Rated speed rpm : 700

rack travel mm : 12.00
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1370
rack travel mm : 12.00
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 10.95
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 750
rack travel mm : 11.75
Tolerance mm : + - 0.05

Pressure hPa : 670
rack travel mm : 11.25
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1370
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 196.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1370
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 191.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 174.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 155.0
Tolerance
cm³/1000 strokes : + - 15.0
Check tolerance
cm³/1000S. : + - 19.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 4.00
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 5.5
Spread
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 7.5

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS**Note remarks**

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 07.11.97
Test oil : ISO 4113

Combination No. : 0 402 646 785B

Injection pump
Pump designation : PE6P120A320LS7869
EP type number : 0 412 626 887

Governor
Governor design. : RQV300...1050PA1078K
Governor no. : 0 421 815 359

Cust. part No. : 9880968

Customer-spec. information

Customer : LIEBHERR
Motor : D 9406 TI-EA3
Power KW : 300.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 165
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 6- 3- 5- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 950

Rack travel in mm : 12.65
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 305.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance cm³/1000s. : + 4.0
 Spred _____
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000s. : 9.0

Rated speed rpm : 300
 Rack travel in mm : 3.90
 Tolerance mm : + 0.10
 Del. quantity cm³/1000 strokes : 13.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000s. : + 6.0
 Spred
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000s. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1117
 guide sleeve
 travel mm : 10.27
 Tolerance mm : + 0.25

Rated speed rpm : 300
 guide sleeve
 travel mm : 1.14
 Tolerance mm : + 0.25

Rated speed rpm : 755
 guide sleeve
 travel mm : 6.17
 Tolerance mm : + 0.25

Rated speed rpm : 382
 guide sleeve
 travel mm : 2.42
 Tolerance mm : + 0.25

Rated speed rpm : 432
 guide sleeve
 travel mm : 3.22
 Tolerance mm : + 0.25

Rated speed rpm : 470
 guide sleeve
 travel mm : 3.64
 Tolerance mm : + 0.25
 Rated speed rpm : 1330
 guide sleeve
 travel mm : 13.50
 Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever
 position degree : - 1
 Rated speed rpm : 1191

Rack travel in mm : 68.25
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 950
 Aneroid pressure hPa : 1400
 Del. quantity cm³/1000 strokes : 305.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000s. : + 4.0
 Spred
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000s. : 9.0

CONTROL LEVER

control lever
 position degree : 114.0
 tolerance degree : + 4.0

RATED SPEED
 rack travel mm : 11.30
 Rated speed rpm : 995
 Tolerance 1/min : + 5

rack travel mm : 4.00
 Rated speed rpm : 1115
 Tolerance 1/min : + 15

rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1300

Tolerance 1/min : + - 15

LOW IDLE

control lever
position degree : 80.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 300

Testing:

Rated speed rpm : 300
rack travel mm : 3.90
Tolerance mm : + - 0.10

Rated speed rpm : 400
rack travel mm : > 8.00

TORQUE CONTROL

Rated speed rpm : 950
rack travel mm : 12.65
Tolerance mm : + - 0.05

Rated speed rpm : 500
rack travel mm : 10.65
Tolerance mm : + - 0.10

Rated speed rpm : 800
rack travel mm : 11.50
Tolerance mm : + - 0.10

Rated speed rpm : 900
rack travel mm : 12.65
Tolerance mm : + - 0.10

Rated speed rpm : 600
rack travel mm : 10.95
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 950
Pressure hPa : 1400
rack travel mm : 12.65
Tolerance mm : + - 0.05

Rated speed rpm : 950

Pressure hPa : -
rack travel mm : 9.30
Tolerance mm : + - 0.20

MEASUREMENT

Rated speed rpm : 950

Pressure hPa : 950
rack travel mm : 12.00
Tolerance mm : + - 0.05

Pressure hPa : 750
rack travel mm : 10.70
Tolerance mm : + - 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1400
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 295.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1400
Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 319.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 245.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Set starting CRT at K-cam.

Rated speed rpm : 100
rack travel mm : 9.90
Tolerance mm : + 0.30
Del. quantity
cm³/1000 strokes : 200.0
Tolerance
cm³/1000 strokes : + 10.0
Check tolerance
cm³/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 3.90
Tolerance mm : + 0.10
Del. quantity
cm³/1000 strokes : 13.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Speed
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.11.97
Test oil : ISO 4113

Combination No. : 0 402 646 785C

Injection pump
Pump designation : PE6P120A320LS7869
EP type number : 0 412 626 887

Governor
Governor design. : RQV300...1050PA1078K
Governor no. : 0 421 815 359

Cust. part No. : 9882898

Customer-spec. information
Customer : LIEBHERR
Motor : D 9406 TI-E A3
Power KW : 295.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 165
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 6- 3- 5- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 12.15
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 283.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + - 4.0

Spred

Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000s. : + - 9.0

Rated speed rpm : 400

Rack travel in mm : 4.20
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 10.0

Tolerance
cm³/1000 strokes : + - 3.0

Check tolerance
cm³/1000s. : + - 6.0

Spred

Tolerance
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000s. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1117

guide sleeve

travel mm : 10.27

Tolerance mm : + - 0.25

Rated speed rpm : 300

guide sleeve

travel mm : 1.14

Tolerance mm : + - 0.25

Rated speed rpm : 755

guide sleeve

travel mm : 6.17

Tolerance mm : + - 0.25

Rated speed rpm : 382

guide sleeve

travel mm : 2.42

Tolerance mm : + - 0.25

Rated speed rpm : 432

guide sleeve

travel mm : 3.22

Tolerance mm : + - 0.25

Rated speed rpm : 470

guide sleeve

travel mm : 3.64

Tolerance mm : + - 0.25

Rated speed rpm : 1330

guide sleeve

travel mm : 13.50

Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

control lever

position degree : - 1

Rated speed rpm : 1191

Rack travel in mm : 68.25

Tolerance mm : + - 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Aneroid pressure

hPa : 1400

Del. quantity

cm³/1000 strokes : 283.0

Tolerance

cm³/1000 strokes : + - 1.0

Check tolerance

cm³/1000s. : + - 4.0

Spred

Tolerance

cm³/1000 strokes : 5.0

Check tolerance

cm³/1000s. : 9.0

CONTROL LEVER

control lever

position degree : 116.0

tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 11.15

Rated speed rpm : 1060

Tolerance 1/min : + - 5

rack travel mm : 4.00

Rated speed rpm : 1160

Tolerance 1/min : + - 15

rack travel mm : 0.50

Tolerance mm : + - 0.50

Rated speed rpm : 1200

Tolerance 1/min : + 15

LOW IDLE

control lever
position degree : 75.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 300

CRT mm min. : > 8.00

Testing:

Rated speed rpm : 400
rack travel mm : 4.20
Tolerance mm : + 0.10

Rated speed rpm : 400

TORQUE CONTROL
Rated speed rpm : 1000
rack travel mm : 12.15
Tolerance mm : + 0.05

Rated speed rpm : 500
rack travel mm : 10.00
Tolerance mm : + 0.10

Rated speed rpm : 800
rack travel mm : 11.90
Tolerance mm : + 0.10

Rated speed rpm : 950
rack travel mm : 12.00
Tolerance mm : + 0.10

Rated speed rpm : 600
rack travel mm : 10.45
Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1000
Pressure hPa : 1400
rack travel mm : 12.15
Tolerance mm : + 0.05

Rated speed rpm : 1000
Pressure hPa : -
rack travel mm : 9.30
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1000
Pressure hPa : 850
rack travel mm : 11.45

Tolerance mm : + 0.05

Pressure hPa : 650
rack travel mm : 10.05
Tolerance mm : + 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1400
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 272.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : 1400
Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 297.5
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 245.5
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Set starting CRT at K-cam.

Rated speed rpm : 100
rack travel mm : 9.80
Tolerance mm : + - 0.30
Del. quantity cm³/1000 strokes : 170.0
Tolerance cm³/1000 strokes : + - 10.0
Check tolerance cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 4.20
Tolerance mm : + - 0.10
Del. quantity cm³/1000 strokes : 10.0
Tolerance cm³/1000 strokes : + - 3.0
Check tolerance cm³/1000S. : + - 6.0
Speed
Tolerance cm³/1000 strokes : 6.0
Check tolerance cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 11.11.97
Test oil : ISO 4113

Combination No. : 0 402 648 706

Injection pump
Pump designation : PE8P120A320LS7830
EP type number : 0 412 628 844

Governor
Governor design. : RQ350...600/1150PA13
: 62
Governor no. : 0 421 801 826

Cust. part No. :

Customer-spec. information

Customer : MTU
Motor : 8V183TE92PE
Power KW : 441.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.0

Overflow quantity
min. l/h : 110
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 019

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 067

Outside diameter : 6.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 20.50
Tolerance mm : + 0.50

Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225
: -270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 1150

Rack travel in mm : 14.85
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 312.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 4.0

Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

Rated speed rpm : 350
 Rack travel in mm : 5.30
 Tolerance mm : + 0.10
 Del. quantity
 cm³/1000 strokes : 19.0
 Tolerance
 cm³/1000 strokes : + 3.0
 Check tolerance
 cm³/1000S. : + 6.0
 Spred
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1238
 guide sleeve
 travel mm : 7.54
 Tolerance mm : + 0.15
 Rated speed rpm : 350
 guide sleeve
 travel mm : 3.25
 Tolerance mm : + 0.20
 Rated speed rpm : 1150
 guide sleeve
 travel mm : 7.20
 Tolerance mm : + 0.10
 Rated speed rpm : 685
 guide sleeve
 travel mm : 7.05
 Tolerance mm : + 0.10
 Rated speed rpm : 507
 guide sleeve
 travel mm : 5.26
 Tolerance mm : + 0.10
 Rated speed rpm : 1450

guide sleeve
 travel mm : 13.50
 Tolerance mm : + 0.50
 Rated speed rpm : 748
 guide sleeve
 travel mm : 7.15
 Tolerance mm : + 0.10

GUIDE SLEEVE POSITION

control lever
 position degree : 105
 Rated speed rpm : 850
 Rack travel in mm : 18.00
 Tolerance mm : + 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1150
 Aneroid pressure
 hPa : 2000
 Del. quantity
 cm³/1000 strokes : 312.0
 Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 98.0
 tolerance degree : + 4.0

RATED SPEED
 rack travel mm : 13.80
 Rated speed rpm : 1195
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1310
 Tolerance 1/min : + 10
 rack travel mm : 0.50
 Tolerance mm : + 0.50
 Rated speed rpm : 1350

LOW IDLE

control lever

position degree : 73.0
tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 7.00

Testing:

Rated speed rpm : 350
rack travel mm : 5.30
Tolerance mm : + - 0.10

TORQUE CONTROL

Rated speed rpm : 1150
rack travel mm : 14.85
Tolerance mm : + - 0.05

Rated speed rpm : 750
rack travel mm : 14.85
Tolerance mm : + - 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : -

Rated speed rpm : 500
Pressure hPa : 400
rack travel mm : 1.20
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 1200
rack travel mm : 5.55
Tolerance mm : + - 0.15

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 200

Check
speed 1/min : > 80
Check
speed 1/min : < 250

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 2000
Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 308.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 5.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 121.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 9.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 16.00
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 330.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 350
Rack travel in mm : 5.30
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 19.0

Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.10.97
Test oil : ISO 4113

Combination No. : 0 402 678 826

Injection pump
Pump designation : PE8P120A320LS7878-1
EP type number : 0 412 628 906

Governor
Governor design. : RSV400...1000P1A589
Governor no. : 0 421 833 449

Cust. part No. : 9279387

Customer-spec. information

Customer : LIEBHERR
Motor : D 9408 TI-E
Power KW : 317.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 105
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.55
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 8- 7- 2- 6
: - 3- 5- 4

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.00
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 251.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0
 Spread _____
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

Rated speed rpm : 400
 Rack travel in mm : 4.75
 Tolerance mm : + 0.20
 Del. quantity cm³/1000 strokes : 26.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0
 Spread
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + 0.20
 governor spring
 pre-tension
 click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Aneroid pressure hPa : 1200
 Del. quantity cm³/1000 strokes : 251.0
 Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0
 Spread
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 98.0
 tolerance degree : + 4.0
 RATED SPEED
 rack travel mm : 12.00
 Rated speed rpm : 940
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 990
 Tolerance 1/min : + 15
 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1160
 rack travel mm : 4.00
 Rated speed rpm : 1005
 Tolerance 1/min : + 15

LOW IDLE

control lever
 position degree : 74.0
 tolerance degree : + 4.0
 Setting point w/out bumper spring
 Rated speed rpm : 400
 rack travel mm : 3.75
 Tolerance mm : + 0.10

Testing:

Rated speed rpm : 400
 rack travel mm : 4.75
 Tolerance mm : + 0.20
 rack travel mm : 2.00
 Rated speed rpm : 500
 Tolerance 1/min : + 30

TORQUE CONTROL

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 900 |
| rack travel mm | : | 13.00 |
| Tolerance mm | : | + - 0.05 |

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| rack travel mm | : | 13.00 |
| Tolerance mm | : | + - 0.10 |

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 700 |
| rack travel mm | : | 13.00 |
| Tolerance mm | : | + - 0.10 |

**ANEROID/ALTITUDE
COMPENSATOR TEST**

SETTING

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | 1200 |
| rack travel mm | : | 13.00 |
| Tolerance mm | : | + - 0.10 |

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | - |
| rack travel mm | : | 11.30 |
| Tolerance mm | : | + - 0.15 |

MEASUREMENT

| | | |
|-----------------|---|----------|
| Rated speed rpm | : | 500 |
| Pressure hPa | : | 800 |
| rack travel mm | : | 12.50 |
| Tolerance mm | : | + - 0.05 |

| | | |
|----------------|---|----------|
| Pressure hPa | : | 700 |
| rack travel mm | : | 11.70 |
| Tolerance mm | : | + - 0.15 |

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

| | | |
|-------------------------------|---|---------|
| hPa | : | 1200 |
| Rated speed rpm | : | 500 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 263.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 3.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 6.0 |

Aneroid pressure

| | | |
|-------------------------------|---|---------|
| hPa | : | 1200 |
| Rated speed rpm | : | 700 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 253.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 3.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 6.0 |

Aneroid pressure

| | | |
|-------------------------------|---|---------|
| hPa | : | - |
| Rated speed rpm | : | 500 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 213.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 1.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 4.0 |

Spread

| | | |
|-------------------------------|---|------|
| Tolerance | | |
| cm ³ /1000 strokes | : | 8.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | 12.0 |

STARTING FUEL DELIVERY

| | | |
|-------------------------------|---|----------|
| Rated speed rpm | : | 100 |
| rack travel mm | : | 20.50 |
| Tolerance mm | : | + - 0.50 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 215.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 20.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 24.0 |

LOW IDLE

| | | |
|-------------------------------|---|----------|
| Rated speed rpm | : | 400 |
| Rack travel in mm | : | 4.75 |
| Tolerance mm | : | + - 0.20 |
| Del. quantity | | |
| cm ³ /1000 strokes | : | 26.0 |
| Tolerance | | |
| cm ³ /1000 strokes | : | + - 3.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | + - 6.0 |

Spread

| | | |
|-------------------------------|---|------|
| Tolerance | | |
| cm ³ /1000 strokes | : | 6.0 |
| Check tolerance | | |
| cm ³ /1000S. | : | 10.0 |

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 0 402 678 826E

Injection pump
Pump designation : PE8P120A320LS7878-1
EP type number : 0 412 628 906

Governor
Governor design. : RSV400...1000P1A589
Governor no. : 0 421 833 449

Cust. part No. : 9279387

Customer-spec. information

Customer : LIEBHERR
Motor : D 9408 TI-E
Power KW : 317.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + - 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + - 0.1

Overflow quantity
min. l/h : 105
Tolerance l/h : + - 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + - 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + - 1.0

Prestroke mm : 4.55
Tolerance mm : + - 0.05
Check tolerance mm : + - 0.10

Rack travel in mm : 10.50
Tolerance mm : + - 1.50

Firing order : 1- 8- 7- 2- 6
: - 3- 5- 4

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + - 0.50
Check tolerance °NW : + - 0.75

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.00
Tolerance mm : + - 0.05

Del. quantity
cm³/1000 strokes : 251.0

Tolerance
cm³/1000 strokes : + - 1.0

Check tolerance cm³/1000S. : + 4.0
 Spred _____
 Tolerance cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 9.0

 Rated speed rpm : 400
 Rack travel in mm : 4.75
 Tolerance mm : + 0.20
 Del. quantity cm³/1000 strokes : 26.0
 Tolerance cm³/1000 strokes : + 3.0
 Check tolerance cm³/1000S. : + 6.0
 Spred
 Tolerance cm³/1000 strokes : 6.0
 Check tolerance cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever position degree : - 3
 governor spring pre-tension click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Aneroid pressure hPa : 1200
 Del. quantity cm³/1000 strokes : 251.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 4.0
 Spred
 Tolerance cm³/1000 strokes : 5.0

Check tolerance cm³/1000S. : 9.0

RATED SPEED
 rack travel mm : 12.00
 Rated speed rpm : 940
 Tolerance 1/min : + 5
 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1160
 rack travel mm : 4.00
 Rated speed rpm : 1005
 Tolerance 1/min : + 15

LOW IDLE

Setting point w/out bumper spring

Rated speed rpm : 400
 rack travel mm : 3.75
 Tolerance mm : + 0.10

Testing:

Rated speed rpm : 400
 rack travel mm : 4.75
 Tolerance mm : + 0.20

TORQUE CONTROL

Rated speed rpm : 900
 rack travel mm : 13.00
 Tolerance mm : + 0.05

Rated speed rpm : 500
 rack travel mm : 13.00
 Tolerance mm : + 0.10

Rated speed rpm : 700
 rack travel mm : 13.00
 Tolerance mm : + 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
 Pressure hPa : 1200
 rack travel mm : 13.00
 Tolerance mm : + 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 11.30
Tolerance mm : + 0.10

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 800
rack travel mm : 12.50
Tolerance mm : + 0.05

Pressure hPa : 700
rack travel mm : 11.70
Tolerance mm : + 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1200
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 263.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : 1200
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 253.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 213.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm³/1000 strokes : 215.0
Tolerance
cm³/1000 strokes : + 10.0
Check tolerance
cm³/1000S. : + 14.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 4.75
Tolerance mm : + 0.20
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.11.97
Test oil : ISO 4113

Combination No. : 0 402 678 826F

Injection pump
Pump designation : PE8P120A320LS7878-1
EP type number : 0 412 628 906

Governor
Governor design. : RSV400...1000P1A589
Governor no. : 0 421 833 449

Cust. part No. : 9883113

Customer-spec. information

Customer : LIEBHERR
Motor : D 9408 TI-E
Power KW : 342.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 105
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 4.55
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 8- 7- 2- 6
: - 3- 5- 4

Phasing : 0-45-90-135-180
: -225-270-315
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 13.75
Tolerance mm : + 0.05

Del. quantity
cm³/1000 strokes : 271.0

Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

Rated speed rpm : 400
 Rack travel in mm : 4.65
 Tolerance mm : + 0.20
 Del. quantity
 cm³/1000 strokes : 26.0
 Tolerance
 cm³/1000 strokes : + 3.0
 Check tolerance
 cm³/1000S. : + 6.0
 Spred
 Tolerance
 cm³/1000 strokes : 6.0
 Check tolerance
 cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE POSITION

control lever
 position degree : - 3
 Rated speed rpm : 800
 Rack travel in mm : 0.50
 Tolerance mm : + 0.20

governor spring
 pre-tension
 click setting x : 4.00

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 900
 Aneroid pressure
 hPa : 1400
 Del. quantity
 cm³/1000 strokes : 271.0

Tolerance
 cm³/1000 strokes : + 1.0
 Check tolerance
 cm³/1000S. : + 4.0
 Spred
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 103.0
 RATED SPEED
 rack travel mm : 12.75
 Rated speed rpm : 940
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 990
 Tolerance 1/min : + 15
 rack travel mm : 0.85
 Tolerance mm : + 0.55
 Rated speed rpm : 1160
 rack travel mm : 4.00
 Rated speed rpm : 1015
 Tolerance 1/min : + 15

LOW IDLE

control lever
 position degree : 70.0
 Setting point w/out bumper spring
 Rated speed rpm : 400
 rack travel mm : 3.65
 Tolerance mm : + 0.10
 Testing:
 Rated speed rpm : 400
 rack travel mm : 4.65
 Tolerance mm : + 0.20

TORQUE CONTROL
 Rated speed rpm : 900
 rack travel mm : 13.75
 Tolerance mm : + 0.05

Rated speed rpm : 500
rack travel mm : 13.75
Tolerance mm : + - 0.10

Rated speed rpm : 700
rack travel mm : 13.75
Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1400
rack travel mm : 13.75
Tolerance mm : + - 0.10

Rated speed rpm : 500
Pressure hPa : -
rack travel mm : 11.40
Tolerance mm : + - 0.15

MEASUREMENT

Rated speed rpm : 500
Pressure hPa : 850
rack travel mm : 13.10
Tolerance mm : + - 0.05

Pressure hPa : 750
rack travel mm : 12.15
Tolerance mm : + - 0.15

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1400
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 283.5
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : 1400
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 278.0

Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 216.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 4.0
Spread
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 215.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 24.0

LOW IDLE

Rated speed rpm : 400
Rack travel in mm : 4.65
Tolerance mm : + - 0.20
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 12.11.97
Test oil : ISO 4113

Combination No. : 0 402 796 815

Injection pump
Pump designation : PES6P120A720/3LS7388
EP type number : 0 412 726 946

Governor
Governer design. : RE30
Governer no. : 0 421 890 035

Cust. part No. : 51.11103-7458

Customer-spec. information

Customer : MAN
Motor : D 2866 LOH 25
Power KW : 228.0

TEST BENCH REQUIREMENTS

Inlet Line : 4.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holder
assembly : 1 688 901 105

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

Pump-specific values
in Section (B)
must be observed!

(A) INJECTION PUMP SETTINGS
No basic setting.
Setting of constant delivery
under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.45
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 15.50
Tolerance mm : + 0.50

Firing order : 6- 2- 4- 1- 5-
: 3

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : + 0.10
Check
tolerance °NW : + 0.75

Barrel no. : 6

(B) POSITIONER TESTING
Warm-up time: 3 minutes at
n=600 min⁻¹, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1: 0

Setting point
(P, R and H pump)

Uact V : 3.100
CRT mm : 13.00
Tolerance mm : +/- 0.05
Check tolerance mm : +/- 0.10

Check value
(P, R and H pump)

Uact V : 1.700
CRT mm : 6.15
Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.30

Setting point
(M pump)

Uact V : 3.100
CRT mm : 12.50
Tolerance mm : +/- 0.05
Check tolerance mm : +/- 0.10

Check value
(M pump)

Uact V : 1.700
CRT mm : 5.50
Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.30

Stop position
(P, R and H pump)

Uact V : Value with
deenergised adjusting magnet
and control rod in
stop position.
CRT mm : 0.75
Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.35

Stop position
(M pump)

Uact V : 0,720
Tolerance Volt : +/- 0,065

CRT mm : 1,00

Starting position

(M pump)
Uact V : 4,500
Tolerance Volt : +/- 0,115
CRT mm : 19,00
Tolerance mm : +/- 0,80

ENGINE-SPEED SENSOR
(ALL P and R pumps not
H and M pumps)

Test with control rod
in stop position

Engine speed min-1: 60
Amplitude V : 1.4
Tolerance V : +/- 0.6
Check tolerance V : +/- 1.20

Engine speed min-1: 600
Difference
Amplitude to
Amplitude V : max.1.4

(C) INJECTION PUMP WITH POSITIONER

TEST POINT V1

Rated speed rpm : 750
Uact V : 3.100
Del. quantity cm³/1000 strokes : 271.0
Tolerance cm³/1000 strokes : +/- 1.0
Check tolerance cm³/1000S. : +/- 4.0
Spread
Tolerance cm³/1000 strokes : 5.0
Check tolerance cm³/1000S. : 9.0

FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 1000
Uact V : 3.120
Del. quantity cm³/1000 strokes : 252.0
Tolerance cm³/1000 strokes : +/- 3.0
Check tolerance cm³/1000S. : +/- 6.0

Rated speed rpm : 750
Uact V : 1.470
Del. quantity
cm³/1000 strokes : 83.0
Tolerance
cm³/1000 strokes : + - 5.0
Check tolerance
cm³/1000S. : + - 9.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Rated speed rpm : 500
Uact V : 1.950
Del. quantity
cm³/1000 strokes : 176.0
Tolerance
cm³/1000 strokes : + - 4.0
Check tolerance
cm³/1000S. : + - 8.0

TEST POINT L1

Rated speed rpm : 325
Uact V : 1.470
Tolerance Volt : + - 0.060
Check tolerance
Volt : + - 0.060
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : + - 3.0
Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.11.97
Test oil : ISO 4113

Combination No. : 0 402 946 027

Injection pump
Pump designation : PES6P120A320RS8047
EP type number : 0 412 926 029

Governor
Governor design. : RQV275...1250PA1312K
Governor no. : 0 421 815 966

Cust. part No. : CCEP 5160A 66-244

Customer-spec. information

Customer : RENAULT V.I.
Motor : MIDR 06.02.26L71
Power KW : 141.7

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5

Overflow quantity
min. l/h : 145
Tolerance l/h : + 20.0

Test nozzle holder
assembly : 1 688 901 101

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008
Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.00
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 11.00
Tolerance mm : + 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Start of delivery mark

°NW after s.o.d. : -0.25
Tolerance : + 0.50
Check tolerance °NW : + 0.75

Barrel no. : 1

Beginning of delivery difference

betw. rack trav.
mm : 21.00
and maximum rack travel : 11.00
Difference ° CS : 3.25

CRT ZERO POSITION

Rack travel in mm : 12.10
Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 1250

Del. quantity cm³/1000 strokes : 183.0

Tolerance cm³/1000 strokes : + 1.0

Check tolerance cm³/1000S. : + 4.0

Spread

Tolerance cm³/1000 strokes : 5.0

Check tolerance cm³/1000S. : 9.0

Rated speed rpm : 325

Rack travel in mm : -7.20
Tolerance mm : + 0.10

Del. quantity cm³/1000 strokes : 39.0

Tolerance cm³/1000 strokes : + 2.0

Check tolerance cm³/1000S. : + 6.0

Spread

Tolerance cm³/1000 strokes : 8.0

Check tolerance cm³/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1340
guide sleeve travel mm : 9.96
Tolerance mm : + 0.15

Rated speed rpm : 325
guide sleeve travel mm : 1.52
Tolerance mm : + 0.20

Rated speed rpm : 923
guide sleeve travel mm : 6.76
Tolerance mm : + 0.25

Rated speed rpm : 550
guide sleeve travel mm : 3.92
Tolerance mm : + 0.25

Rated speed rpm : 1650
guide sleeve travel mm : 13.50
Tolerance mm : + 0.50

GUIDE SLEEVE POSITION

control lever position degree : - 1
Rated speed rpm : 1430

Rack travel in mm : 11.10
Tolerance mm : + 2.70

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1250
Aneroid pressure hPa : 1600
Del. quantity cm³/1000 strokes : 183.0
Tolerance cm³/1000 strokes : + 1.0
Check tolerance cm³/1000S. : + 4.0
Spread
Tolerance cm³/1000 strokes : 5.0
Check tolerance cm³/1000S. : 9.0

CONTROL LEVER

control lever position degree : 296.0
tolerance degree : + 4.0

RATED SPEED rack travel mm : -1.00

Rated speed rpm : 1330
Tolerance 1/min : + 15

rack travel mm : -8.10
Rated speed rpm : 1470
Tolerance 1/min : + 5

rack travel mm : -11.60
Tolerance mm : + 0.55
Rated speed rpm : 1600

LOW IDLE

control lever
position degree : 241.0
tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. : < -5.80

Testing:

Rated speed rpm : 325
rack travel mm : -7.20
Tolerance mm : + 0.10

Rated speed rpm : 325
rack travel mm : > 5.80

TORQUE CONTROL

Rated speed rpm : 1250

Rated speed rpm : 650
rack travel mm : -2.10
Tolerance mm : + 0.10

Rated speed rpm : 350
rack travel mm : -3.25
Tolerance mm : + 0.25

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1250
Pressure hPa : 1600
Tolerance mm : + 0.10

Rated speed rpm : 500

Pressure hPa : -
rack travel mm : -4.70
Tolerance mm : + 0.20

MEASUREMENT

Rated speed rpm : 1250

Pressure hPa : 240
rack travel mm : -3.40
Tolerance mm : + 0.20

Pressure hPa : 520
rack travel mm : -1.20
Tolerance mm : + 0.05

Start interlock

Rated speed rpm : > 175
Rated speed rpm : < 240

Check
speed 1/min : > 155
Check
speed 1/min : < 260

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1600
Rated speed rpm : 650
Del. quantity
cm³/1000 strokes : 172.0
Tolerance
cm³/1000 strokes : + 3.0
Check tolerance
cm³/1000S. : + 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 120.0
Tolerance
cm³/1000 strokes : + 1.0
Check tolerance
cm³/1000S. : + 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 113.0

Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 14.0

LOW IDLE

Rated speed rpm : 325

Rack travel in mm : -7.20
Tolerance mm : + - 0.10

Del. quantity
cm³/1000 strokes : 39.0
Tolerance
cm³/1000 strokes : + - 2.0

Check tolerance
cm³/1000S. : + - 6.0

Spred
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.11.97
Test oil : ISO 4113

Combination No. : 0 402 946 031

Injection pump
Pump designation : PES6P120A320RS8050
EP type number : 0 412 926 032

Governor
Governor design. : RQ250/1000PA1342
Governor no. : 0 421 801 822

Cust. part No. : 1388694

Customer-spec. information

Customer : SCANIA
Motor : DSI 9E01
Power KW : 170.0

TEST BENCH REQUIREMENTS

Inlet Line : EHAB

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 095

Inlet press. bar : 2.5
Tolerance bar : + 0.1

Overflow quantity
min. l/h : 70
Tolerance l/h : + 10.0

Test nozzle holder
assembly : 1 688 901 104

Opening pressure
bar : 251.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 008
Outside diameter : 6.0
x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : + 1.0

Prestroke mm : 5.00
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Start of delivery mark

Tolerance : + 0.50
Check
tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 12.30
Tolerance mm : + 0.05

Del. quantity _____
 cm³/1000 strokes : 240.0
 Tolerance _____
 cm³/1000 strokes : + - 1.0
 Check tolerance _____
 cm³/1000S. : + - 7.0
 Spread _____
 Tolerance _____
 cm³/1000 strokes : 8.0
 Check tolerance _____
 cm³/1000S. : 12.0
 Rated speed rpm : 285
 Rack travel in mm : 5.30
 Tolerance mm : + - 0.10
 Del. quantity _____
 cm³/1000 strokes : 30.0
 Tolerance _____
 cm³/1000 strokes : + - 3.0
 Check tolerance _____
 cm³/1000S. : + - 6.0
 Spread _____
 Tolerance _____
 cm³/1000 strokes : 4.0
 Check tolerance _____
 cm³/1000S. : 8.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1061
 guide sleeve
 travel mm : 4.72
 Tolerance mm : + - 0.15
 Rated speed rpm : 285
 guide sleeve
 travel mm : 2.17
 Tolerance mm : + - 0.20
 Rated speed rpm : 1000
 guide sleeve
 travel mm : 4.50
 Tolerance mm : + - 0.10
 Rated speed rpm : 410

guide sleeve
 travel mm : 3.50
 Tolerance mm : + - 0.10
 Rated speed rpm : 530
 guide sleeve
 travel mm : 4.50
 Tolerance mm : + - 0.10
 Rated speed rpm : 1670
 guide sleeve
 travel mm : 11.50
 Tolerance mm : + - 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 600
 Rack travel in mm : 16.00
 Tolerance mm : + - 0.60

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1500
 Del. quantity _____
 cm³/1000 strokes : 240.0
 Tolerance _____
 cm³/1000 strokes : + - 1.0
 Check tolerance _____
 cm³/1000S. : + - 7.0
 Spread _____
 Tolerance _____
 cm³/1000 strokes : 8.0
 Check tolerance _____
 cm³/1000S. : 12.0

CONTROL LEVER

control lever
 position degree : 43.0
 tolerance degree : + - 4.0

control lever
 position degree : 105.0
 tolerance degree : + - 4.0

RATED SPEED
 rack travel mm : 11.30
 Rated speed rpm : 1060
 Tolerance 1/min : + - 5
 Check
 speed 1/min : + - 10
 rack travel mm : 4.00

Rated speed rpm : 1235
 Tolerance 1/min : \pm 15
 Check speed 1/min : \pm 20
 rack travel mm : 0.50
 Tolerance mm : \pm 0.50
 Rated speed rpm : 1350

LOW IDLE

control lever position degree : 81.0
 tolerance degree : \pm 4.0

control lever position degree : 21.0
 tolerance degree : \pm 4.0

Setting point w/out bumper spring

Rated speed rpm : 150

CRT mm min. : > 8.00

Testing:

Rated speed rpm : 285
 rack travel mm : 5.30
 Tolerance mm : \pm 0.10

rack travel mm : < 2.00
 Rated speed rpm : 450
 Tolerance 1/min : \pm 30

TORQUE CONTROL

Rated speed rpm : 700
 rack travel mm : 12.30
 Tolerance mm : \pm 0.05

Rated speed rpm : 1000
 rack travel mm : 12.30
 Tolerance mm : \pm 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
 Pressure hPa : 1500
 rack travel mm : 12.30
 Tolerance mm : \pm 0.05

Rated speed rpm : 500
 Pressure hPa : -
 rack travel mm : 10.40
 Tolerance mm : \pm 0.20

MEASUREMENT

Rated speed rpm : 500
 Pressure hPa : 275
 rack travel mm : 10.90
 Tolerance mm : \pm 0.15

Pressure hPa : 425
 rack travel mm : 12.10
 Tolerance mm : \pm 0.05

Start interlock

Rated speed rpm : > 100
 Rated speed rpm : < 170

Check speed 1/min : > 80
 Check speed 1/min : < 190

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 1500
 Rated speed rpm : 1000
 Del. quantity cm³/1000 strokes : 212.0
 Tolerance cm³/1000 strokes : \pm 4.0
 Check tolerance cm³/1000S. : \pm 6.0

Aneroid pressure hPa : -
 Rated speed rpm : 500
 Del. quantity cm³/1000 strokes : 210.0
 Tolerance cm³/1000 strokes : \pm 1.0
 Check tolerance cm³/1000S. : \pm 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
 rack travel mm : 20.50

Tolerance mm : + - 0.50
Del. quantity
cm³/1000 strokes : 250.0
Tolerance
cm³/1000 strokes : + - 20.0
Check tolerance
cm³/1000S. : + - 25.0

LOW IDLE

Rated speed rpm : 285
Rack travel in mm : 5.30
Tolerance mm : + - 0.10
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : + - 3.0
Check tolerance
cm³/1000S. : + - 6.0
Spread
Tolerance
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 8.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 16.09.91
Test oil : ISO 4113

Combination No. : 0 403 436 109

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137

Governor
Governor design. : RQV300...1050MW82-4
Governor no. : 0 420 083 168

Cust. part No. : 3915581

Customer-spec. information
Customer : CUMMINS/US
Motor : 6 CTA-830
Power KW : 175.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holder
assembly : 1 688 901 017

Opening pressure
bar : 208.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.10
Tolerance mm : + 0.05
Check
tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check
tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 149.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 300
 Rack travel in mm : 7.80
 Tolerance mm : + - 0.10
 Del. quantity cm³/1000 strokes : 18.0
 Tolerance cm³/1000 strokes : + - 2.0
 Check tolerance cm³/1000S. : + - 4.5
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1100
 guide sleeve travel mm : 8.00
 Tolerance mm : + - 0.10
 Rated speed rpm : 300
 guide sleeve travel mm : 1.30
 Tolerance mm : + - 0.20
 Rated speed rpm : 550
 guide sleeve travel mm : 3.30
 Tolerance mm : + - 0.30
 Rated speed rpm : 1210
 guide sleeve travel mm : 9.20
 Tolerance mm : + - 0.20

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1050
 Aneroid pressure hPa : 900
 Del. quantity cm³/1000 strokes : 149.0
 Tolerance cm³/1000 strokes : + - 1.0
 Check tolerance cm³/1000S. : + - 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5

Check tolerance cm³/1000S. : 6.0

CONTROL LEVER

control lever position degree : 98.0
 tolerance degree : + - 4.0

RATED SPEED

rack travel mm : 11.60
 Rated speed rpm : 1095
 Tolerance 1/min : + - 5

rack travel mm : 4.00
 Rated speed rpm : 1200
 Tolerance 1/min : + - 15

rack travel mm : 0.50
 Tolerance mm : + - 0.50
 Rated speed rpm : 1300

LOW IDLE

control lever position degree : 66.0
 tolerance degree : + - 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 9.30

Testing:

Rated speed rpm : 300
 rack travel mm : 7.80
 Tolerance mm : + - 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
 Pressure hPa : 900
 rack travel mm : 12.65
 Tolerance mm : + - 0.05

Rated speed rpm : 500

Pressure hPa : -
rack travel mm : 10.50
Tolerance mm : + - 0.10

MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 450
rack travel mm : 12.10
Tolerance mm : + - 0.20

Pressure hPa : 225
rack travel mm : 10.95
Tolerance mm : + - 0.05

Start interlock

Rated speed rpm : > 100
Rated speed rpm : < 220

Check speed 1/min : > 80
Check speed 1/min : < 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa : 900
Rated speed rpm : 700
Del. quantity cm3/1000 strokes : 147.0
Tolerance cm3/1000 strokes : + - 1.5
Check tolerance cm3/1000S. : + - 4.0
Spread
Tolerance cm3/1000 strokes : 5.0
Check tolerance cm3/1000S. : 7.0

Aneroid pressure hPa : -
Rated speed rpm : 500
Del. quantity cm3/1000 strokes : 93.0
Tolerance cm3/1000 strokes : + - 1.0
Check tolerance cm3/1000S. : + - 3.0

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : + - 1.00
Del. quantity cm3/1000 strokes : 220.0
Tolerance cm3/1000 strokes : + - 5.0
Check tolerance cm3/1000S. : + - 8.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 7.80
Tolerance mm : + - 0.10
Del. quantity cm3/1000 strokes : 18.0
Tolerance cm3/1000 strokes : + - 2.0
Check tolerance cm3/1000S. : + - 4.5
Spread
Tolerance cm3/1000 strokes : 3.5
Check tolerance cm3/1000S. : 5.5

End of test specification sheet

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.02.89
Test oil : ISO 4113

Combination No. : 0 403 446 152

Injection pump
Pump designation : PES6MW100/320RS1119
EP type number : 0 413 406 113

Governor
Governor design. : RQV300...1400MW57
Governor no. : 0 420 083 078

Cust. part No. :

Customer-spec. information

Customer : VOLVO
Motor : TD 61-3012
Power KW : 132.0

TEST BENCH REQUIREMENTS

Inlet Line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test Lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.15
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 91.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000s. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000s. : 6.0

Rated speed rpm : 300
 Rack travel in mm : 6.95
 Tolerance mm : + 0.05
 Del. quantity cm³/1000 strokes : 18.0
 Tolerance cm³/1000 strokes : + 2.0
 Check tolerance cm³/1000S. : + 4.5
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 5.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300
 guide sleeve travel mm : 1.40
 Tolerance mm : + 0.20
 Rated speed rpm : 1580
 guide sleeve travel mm : 9.70
 Tolerance mm : + 0.20
 Rated speed rpm : 1450
 guide sleeve travel mm : 8.50
 Tolerance mm : + 0.10
 Rated speed rpm : 550
 guide sleeve travel mm : 3.70
 Tolerance mm : + 0.30

GUIDE SLEEVE POSITION

control lever position degree : 1
 Rated speed rpm : 1480

Rack travel in mm : 16.50
 Tolerance mm : + 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Aneroid pressure hPa : 505
 Del. quantity cm³/1000 strokes : 91.0
 Tolerance cm³/1000 strokes : + 1.0
 Check tolerance cm³/1000S. : + 3.0
 Spread
 Tolerance cm³/1000 strokes : 3.5
 Check tolerance cm³/1000S. : 6.0

CONTROL LEVER

control lever position degree : 114.0
 tolerance degree : + 4.0

RATED SPEED
 rack travel mm : 10.60
 Rated speed rpm : 1445
 Tolerance 1/min : + 5
 rack travel mm : 4.00
 Rated speed rpm : 1610
 Tolerance 1/min : + 15
 rack travel mm : 0.55
 Tolerance mm : + 0.45
 Rated speed rpm : 1725

LOW IDLE

control lever position degree : 68.0
 tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 8.50

Testing:

Rated speed rpm : 300
 rack travel mm : 6.95
 Tolerance mm : + 0.05

rack travel mm : 2.00

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 505
rack travel mm : 11.45
Tolerance mm : + - 0.05

Rated speed rpm : 550
Pressure hPa : -
rack travel mm : 10.15
Tolerance mm : + - 0.05

MEASUREMENT

Rated speed rpm : 550
Pressure hPa : 445
rack travel mm : 11.25
Tolerance mm : + - 0.05

Pressure hPa : 310
rack travel mm : 10.40
Tolerance mm : + - 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 76.0
Tolerance
cm³/1000 strokes : + - 1.0
Check tolerance
cm³/1000S. : + - 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 150.0
Tolerance
cm³/1000 strokes : + - 10.0
Check tolerance
cm³/1000S. : + - 13.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.95
Tolerance mm : + - 0.05
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : + - 2.0
Check tolerance
cm³/1000S. : + - 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 09.08.90
Test oil : ISO 4113

Combination No. : 0 403 446 153

Injection pump
Pump designation : PES6MW100/320RS1119
: -1
EP type number : 0 413 406 114

Governor
Governer design. : RQV300...1400MW57-1
Governer no. : 0 420 083 079

Cust. part No. :

Customer-spec. information

Customer : VOLVO
Motor : TD 61..3012
Power KW : 150.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet
temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 046

Inlet press. bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening pressure
bar : 173.5
Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 31.0
Tolerance bar : + 1.0

Prestroke mm : 3.15
Tolerance mm : + 0.05
Check tolerance mm : + 0.10

Rack travel in mm : 10.50
Tolerance mm : + 1.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : + 0.50
Check tolerance °NW : + 0.75

BASIC SETTING

Del. quantity
cm³/1000 strokes : 105.0

Tolerance
cm³/1000 strokes : + 1.0

Check tolerance
cm³/1000S. : + 3.0

Spread

Tolerance
cm³/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 300
 Rack travel in mm : 6.35
 Tolerance mm : \pm 0.05
 Del. quantity
 cm³/1000 strokes : 18.0
 Tolerance
 cm³/1000 strokes : \pm 2.0
 Check tolerance
 cm³/1000S. : \pm 4.5
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.5

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 1450
 guide sleeve
 travel mm : 8.50
 Tolerance mm : \pm 0.10

 Rated speed rpm : 300
 guide sleeve
 travel mm : 1.40
 Tolerance mm : \pm 0.20

 Rated speed rpm : 550
 guide sleeve
 travel mm : 3.70
 Tolerance mm : \pm 0.30

 Rated speed rpm : 1580
 guide sleeve
 travel mm : 9.70
 Tolerance mm : \pm 0.20

GUIDE SLEEVE POSITION

control lever
 position degree : 100
 Rated speed rpm : 1480

Rack travel in mm : 16.50
 Tolerance mm : \pm 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 1000

Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 105.0
 Tolerance
 cm³/1000 strokes : \pm 1.0
 Check tolerance
 cm³/1000S. : \pm 3.0
 Spread
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 6.0

CONTROL LEVER

control lever
 position degree : 113.0
 tolerance degree : \pm 4.0

RATED SPEED
 rack travel mm : 11.00
 Rated speed rpm : 1445
 Tolerance 1/min : \pm 5

 rack travel mm : 4.00
 Rated speed rpm : 1605
 Tolerance 1/min : \pm 15

 rack travel mm : 0.50
 Tolerance mm : \pm 0.50
 Rated speed rpm : 1700

LOW IDLE

control lever
 position degree : 65.0
 tolerance degree : \pm 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 7.90

Testing:

Rated speed rpm : 300
 rack travel mm : 6.35
 Tolerance mm : \pm 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 615
rack travel mm : 12.05
Tolerance mm : \pm 0.05

Rated speed rpm : 550
Pressure hPa : -
rack travel mm : 10.15
Tolerance mm : \pm 0.05

MEASUREMENT

Rated speed rpm : 550
Pressure hPa : 525
rack travel mm : 11.85
Tolerance mm : \pm 0.05

Pressure hPa : 270
rack travel mm : 10.40
Tolerance mm : \pm 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : -
Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 76.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.00
Tolerance mm : \pm 1.00
Del. quantity
cm³/1000 strokes : 150.0
Tolerance
cm³/1000 strokes : \pm 10.0
Check tolerance
cm³/1000S. : \pm 13.0

LOW IDLE

Rated speed rpm : 300
Rack travel in mm : 6.35
Tolerance mm : \pm 0.05
Del. quantity
cm³/1000 strokes : 18.0
Tolerance
cm³/1000 strokes : \pm 2.0
Check tolerance
cm³/1000S. : \pm 4.5
Spread
Tolerance
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.5

End of test specification sheet